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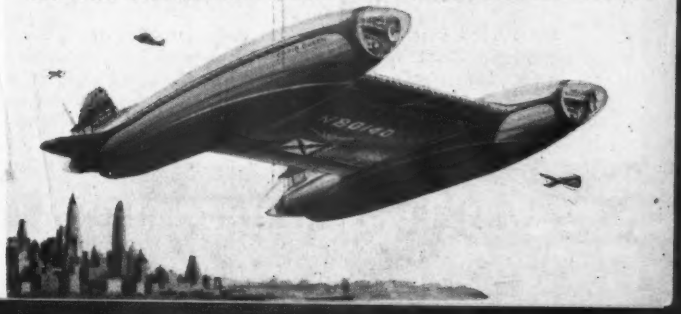

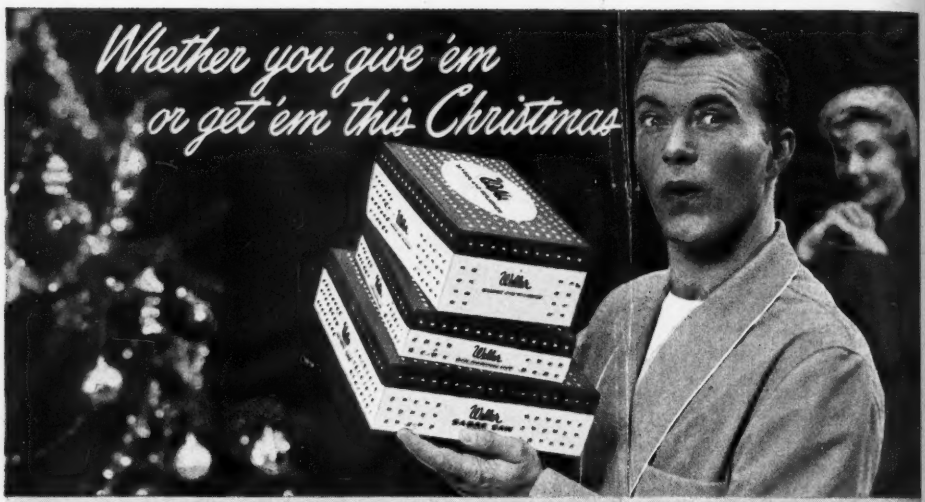

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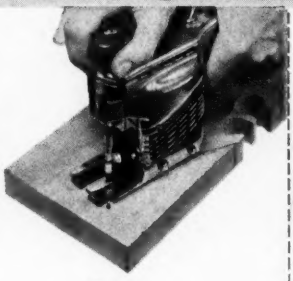

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SPECIAL FEATURES

Yes, They Do Dope Athletes.....*Bernard Seeman* 59

Why Don't We Build Dirigible Cruise Ships? *Frank Tinsley* 62

All About Pipes.....*Harvey Gardner* 68

Pillow-Wheel Truck Goes Anywhere (Cover)..... 75

More 1958 Cars..... 82

Secrets Of Sleep.....*Lawrence Sanders* 99

TOM McCAHILL

Mail For McCahill 49

Tests The '58 Ford 86

Tests The '58 Chevy 90

REGULAR FEATURES

It's New! 70

Hunting And Fishing: Xmas Gifts For Hunters And Fishermen .....*Wynn Davis* 80

MI's Bright Idea Award: "Magic Wand"..... 97

Inventions Wanted! 103

MMI: He Profits From Your Good Luck..*George Daniels* 104

SHORT FEATURES

Underground Rock 'N' Roll..... 74

French Home-Built Aircraft..... 78

Home-Made Fire Department..... 94

High School Student's Baby Ace..... 96

Cross-Country Yacht 98

Meatball In The Mirror..... 102

DEPARTMENTS

Invention Clinic 20

Dear Editor 26

It's Coming !..... 32

Speaking Of Jobs: The Motor Doctor..... 54

Help Wanted! 54

(continued on page 6)

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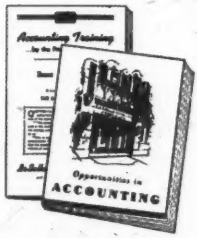

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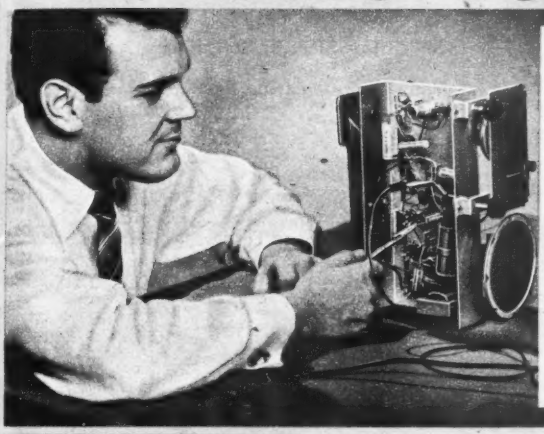

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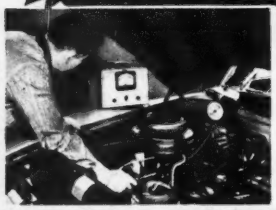

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continued from page 2

SPECIAL SERVICE SECTION

Your Home Heating System 106

PROJECTS FOR CHRISTMAS

Western Clothes Rack 115
Gifts For Craftsmen 120
Cigar Humidor 122
Roll-Away Train Table 124
Tot's Rocker 128
Personalized Book Ends 129

FATHER AND SON PROJECT

MI's Satellite Saucer 116

AROUND THE HOUSE

Shop Wall 130
First Aid For Casement Windows 134

RADIO AND HI-FI

New Hi-Fi Products 30
Tape Storage Cabinet 136

BOATS AND BOATING

Boatbuilding Tips 140

AUTOMOTIVE

Can Your Tires Take It? 142

PHOTOGRAPHY

Monthly Photo Contest 146
Photography Today 149
Photo Tips 151

ASTRONOMY

One-Man Observatory 152

DEPARTMENTS

Home Hints 126
Fresh Paint Tips 133
Golden Hammer Award Winners 138
What's New? 159
Need A Workbench? 159

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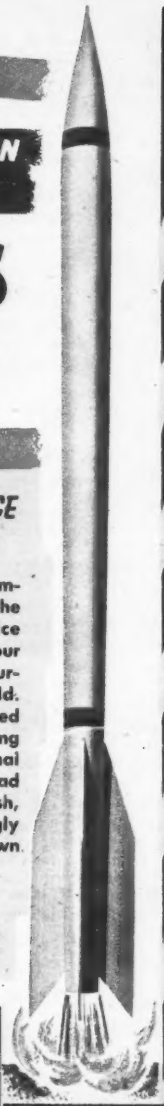

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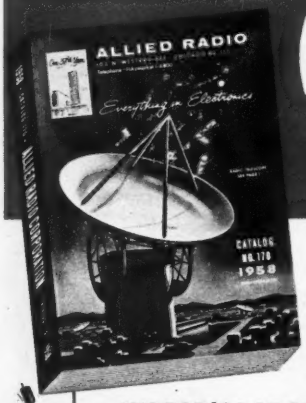

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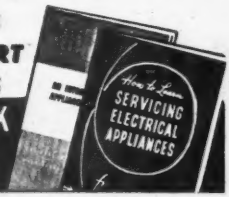

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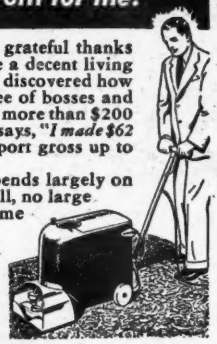

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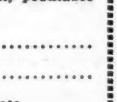

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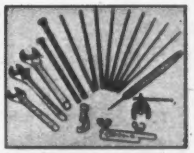
At left, Mr. Anderson demonstrates the commercial type, heavy-duty, ¼ h.p. refrigeration high-side which you build as part of your training.



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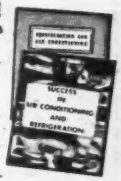

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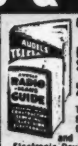

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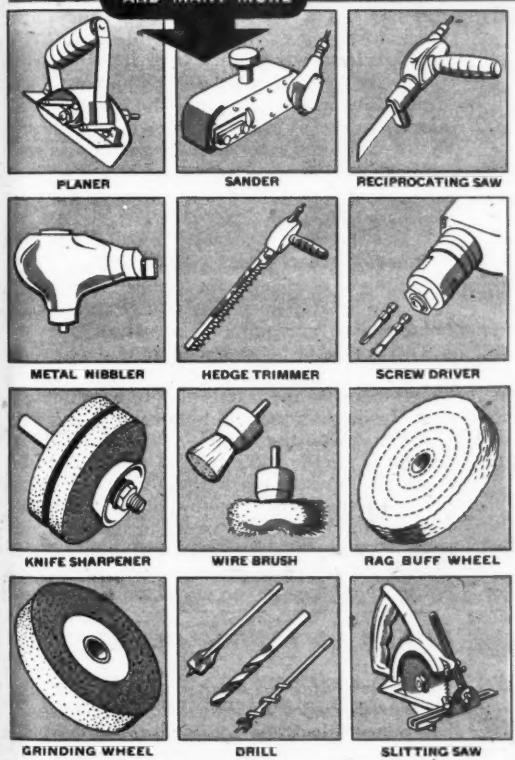

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Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Skin Diving Equipment

Herbert L. Lohman of Norfolk, Va., sends diagrams and an explanation of a recycling valve arrangement which might make it possible for skin divers to remain underwater twice as long as with air tanks. He feels that this would be the greatest advancement since the Aqua-lung. Will it work?

The reasoning behind the mechanism is partially sound. You may run into problems which might need much study and research. I was called on to do the calculations for the casket submergence of the late Harry Houdini at the Hotel Shelton pool. Theoretically, the casket contained enough oxygen to support life for three and one half hours. But the increase in carbon dioxide in the air would have a physiological effect on breathing and heartbeat. This was not definitely known. Houdini got out after one and one half hours but the experiment added little to technical knowledge. So while Houdini was able to work under the condition which you seek to impose, it may be that others, not as strong physically, might find it dangerous. You could do better by eliminating chemically the CO_2. On the other hand, your valve mechanism leaves much to be desired. This depends for accuracy on a very delicate spring release and complicated parts which may fail. The safety feature demands the control of an alert operator at just the time when his senses might be dulled. A complete restudy is recommended.

INVENTOR'S TIP OF THE MONTH

At current market prices you can buy two to four-room-sized air conditioners for the price of an air conditioner for your car.

A do-it-yourself packaged air conditioner for the car would meet a quick, favorable market if the inventor or manufacturer is alert enough to put it on the market at a $100 list price. There is no reason why this can't be done. You save the cost of the compressor motor by using the auto engine, or an exhaust heat exchanger.

Spring Skewer

Charles F. Cassell of Seattle, Wash., sends a sample of a spring-type skewer to be used for closing stuffed poultry, fish and meats. What is our opinion?

This seems to be an excellent gadget. You should ask your attorney for a complete search because thousands of bent wire devices have been patented and about five times that number are on the market without benefit of patent protection. Your next step should be to decide how to market the article. Made from stainless steel, mounted on a colorful card containing five or six of the skewers, and sold for around 25 cents per card, should make this an attractive item. It is certainly seems better than the pin or spiral wire skewers.

Right Angle Drilling Attachment

James A. Crain of Hackensack, N. J., sends photographs of a drilling attachment which will permit electricians to drill through overhead beams. His attorney feels he can patent the article. Should he patent it or forget about it? Do we think the sales potential will warrant further action?

You did not send copies of the prior patents so we cannot judge whether this tool is

[*Continued on page 22*]

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

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[Continued from page 20]

markedly different from others in the field. We suspect that this is a very useful attachment, judging from the photos. In fact, you seem almost ready to market the article yourself. You probably could cover the entire costs of your patent if you sold as few as 35 of these attachments. They also could be used when drilling holes for attaching ornamental bumpers to regulation auto bumpers, for drilling bolt holes in wooden constructions, in boat building and the like. If you have no conflict on prior patents and have a good idea of how you intend to follow-up your patent grant, we would recommend that you take the chance. Sales potential is not rosy but reasonably modest.

Emergency Brake

Armand R. Blanchard and Raymond N. Nilles of Inglewood, Calif., have worked out

[Continued on page 24]

Inventors

The following are the usual preliminary steps to take toward patent protection.

You are advised first, to make a disclosure of your invention. Date, sign and have this document witnessed by two or more persons who are capable of understanding your invention. The "Evidence of Invention" form mentioned below, we offer as a convenience in making your disclosure and in starting action leading toward patent protection.

Mail your disclosure to the registered patent attorney or agent whom you select to assist you, together with a letter authorizing him to conduct a preliminary search among previously granted U. S. patents for similar types of invention. He then prepares for you a report on the probable patentability of your invention and, if the report is favorable, recommends the further course you should take.

This firm is registered to practice before the U. S. Patent Office and is available to assist you in the preparation and prosecution of patent applications. We shall be glad to send you without obligation, the "Evidence of Invention" disclosure form mentioned above and our instructive booklet, "Patent Protection for Inventors".

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I'd like to give this to my fellow men...

while I am still able to help!

I was young once, as you may be—today I am older. Not too old to enjoy the fruits of my work, but older in the sense of being wiser. And once I was poor, desperately poor. Today almost any man can stretch his income to make ends meet. Today, there are few who hunger for bread and shelter. But in my youth I knew the pinch of poverty; the emptiness of hunger; the cold stare of the creditor who would not take excuses for money. Today, all that is past. And behind my city house, my summer home, my Cadillacs, my Winter-long vacations and my sense of independence—behind all the wealth of cash and deep inner satisfaction that I enjoy—there is one simple secret. It is this secret that I would like to impart to you. If you are satisfied with a humdrum life of service to another master, turn this page now—read no more. If you are interested in a fuller life, free from bosses, free from worries, free from fears, read further. This message may be meant for you.

By Victor B. Mason

I am printing my message in a magazine. It may come to the attention of thousands of eyes. But of all those thousands, only a few will have the vision to understand. Many may read; but of a thousand only you may have the intuition, the sensitivity, to understand that what I am writing may be intended for you—may be the tide that shapes your destiny, which, taken at the crest, carries you to levels of independence beyond the dreams of avarice.

Don't misunderstand me. There is no mysticism in this. I am not speaking of occult things; of innumerable laws of nature that will sweep you to success without effort on your part. That sort of talk is *rubbish!* And anyone who tries to tell you that you can *think* your way to riches without effort is a false friend. I am too much of a realist for that. And I hope you are.

I hope you are the kind of man—if you have read this far—who knows that anything worthwhile has to be *earned!* I hope you have learned that there is no reward without effort. If you have learned this, then you may be ready to take the next step in the development of your karma—you may be ready to learn and use the secret I have to impart.

I Have All The Money I Need

In my own life I have gone beyond the need of money. I have it. I have gone beyond the need of gain. I have two businesses that pay me an income well above any amount I have need for. And, in addition, I have the satisfaction—the deep satisfaction—of knowing that I have put more than three hundred other men in businesses of their own. Since I have no need for money, the greatest satisfaction I get from life, is sharing my secret of personal independence with others—seeing them achieve the same heights of happiness that have come into my own life.

Please don't misunderstand this statement. I am not a philanthropist. I believe that charity is something that no proud man will accept. I have never seen a man who was worth his salt who would accept something for nothing. I have never met a highly successful man whom the world respected who did not sacrifice something to gain his position. And, unless you are willing to make at least half the effort, I'm not interested in giving you a "leg up" to the achievement of your goal. Frankly, I'm going to charge you something for the secret I give you. Not a lot—but enough to make me believe that you are a little above the fellows who merely "wish" for success and are not willing to sacrifice something to get it.

A Fascinating and Peculiar Business

I have a business that is peculiar—one of my businesses. The unusual thing about it is that it is needed in every little community throughout this country. But it is a business that will never be invaded by the "big fellows". It has to be handled on a local basis. No giant octopus can ever gobble up the whole thing. No big combine is ever going to destroy it. It is essentially a "one man" business that can be operated without outside help. It is a business that is good summer and winter. It is a business that is growing each year. And, it is a business that can be started on an investment so small that it is within the reach of anyone who has a television set. But it has nothing to do with television.

This business has another peculiarity. It can be started at home in spare time. No risk to present job. No risk to present income. And no need to let anyone else know you are "on your own". It can be run as a spare time business for extra money. Or, as it grows to the point where it is paying more than your present salary, it can be expanded into a full time business—overnight. It can give you a sense of personal independence that will free you forever from the fear of lay-off, loss of job, depressions, or economic reverses.

Are You Mechanically Inclined?

While the operation of this business is partly automatic, it won't run itself. If you are to use it as a stepping stone to independence, you must be able to work with your hands, use such tools as hammer and screw driver, and enjoy getting into a pair of blue jeans and rolling up your sleeves. But two hours a day of manual work will keep your "factory" running 24 hours turning out a product that has a steady and ready sale in every community. A half dollar spent for raw materials can bring you six dollars in cash—six times a day.

In this message I'm not going to try to tell you the entire story. There is not enough space on this page. And, I am not going to ask you to spend a penny now to learn the secret. I'll send you all the information, free. If you are interested in becoming independent, in becoming your own boss, in knowing the sweet fruits of success as I know them, send me your name. That's all. Just your name. I won't ask you for a penny. I'll send you all the information about one of the most fascinating businesses you can imagine. With these facts, you will make your own investigation. You will check up on conditions in your neighborhood. You will weigh and analyze the whole proposition. Then, and then only, if you decide to take the next step, I'll allow you to invest $15.00. And even then, if you decide that your fifteen dollars has been badly invested I'll return it to you. Don't hesitate to send your name. I have no salesmen. I will merely write you a long letter and send you complete facts about the business I have found to be so successful. After that, you make the decisions.

Does Happiness Hang on Your Decision?

Don't put this off. It may be a coincidence that you are reading these words right now. Or, it may be a matter that is more deeply connected with your destiny than either of us can say. There is only one thing certain: If you have read this far you are interested in the kind of independence I enjoy. And if that is true, then you must take the next step. No coupon on this advertisement. If you don't think enough of your future happiness and prosperity to write your name on a postcard and mail it to me, forget the whole thing. But if you think there is a destiny that shapes men's lives, send your name now. What I send you may convince you of the truth of this proverb. And what I send you will not cost a penny, now or at any other time.

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CARL MILLER
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NEW YORK CITY

Invention Clinic

[*Continued from page 22*]

an emergency brake system which works automatically if the hydraulic system fails. Where should they start—at the Patent Office, a brake company or an accessory manufacturer?

You have not supplied sufficient information, nor furnished us with the schematic method of operation. You might have arranged the parts so that the emergency brake would be applied even when it would be dangerous to do so. You may have a design which would not be workable as an accessory. We could ask a dozen other questions which would need favorable answers before suggesting action. If you are convinced that your brake will do everything required of the hydraulics, then we would recommend that you ask your attorney for a patent search report.

INVENTORS

I shall be pleased to furnish you, upon request, with information relative to patent procedure—without any obligation on your part.

PATRICK D. BEAVERS
Registered Patent Attorney
923 Columbian Building, Washington 1, D. C.

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Cigarette Extinguisher

Gerald B. Sweet of Sacramento, Calif., sends a photo of a cigarette extinguisher intended primarily for cars. He says that it rolls out the lighted end, extinguishes cigarettes in rapid succession, cannot clog or wear out and there are no flying sparks. What are the possibilities?

The photograph shows neither construction details nor how this article is expected to operate. Assuming your statements about manufacturing costs are correct, the device functions as outlined and there is no problem in locating the cigarette properly in the extinguishing end, there should be a good market for the product. You are confronted with the situation that extinguishing ash trays already exist in all autos, buses, airplanes and other areas. The best bet for the present might be to make the item available as an accessory, during which time you can try to promote its sale.

Seed Tape

J. C. Williamson of Jackson, Ga., a science instructor at Jackson High School, sends a science research paper presented at the Georgia Science Fair by Grady Jackson, an 11th grade student. The paper suggests a system for putting seeds in a specially prepared tape incorporating fertilizer. Is the idea patentable? What are the prospects for commercialization?

You deserve to be highly complimented for your interest in your student and for your dedication toward the Science Fair program. Seemingly your 11th grade student independently discovered an idea which was patented as far back as May, 1879. A rather complete story on Seed Tape Planters appeared in the Invention Clinic in May 1952. Grady Jackson's bibliography contains no mention of this. But in 1952 Grady was in the sixth grade and was probably not impressionable enough to be influenced by an article on seed tapes.

Shortening Scoop

Mrs. Jack H. Zeinert of Schofield, Wis., thinks that the homemaker would be happy with an ice-cream scoop to measure shortening. Does this have possibilities? What should she do?

You have designed nothing new, hence do not have anything patentable. You may be able to design a very special scoop which will do what you expect. You might then be able to patent it. •

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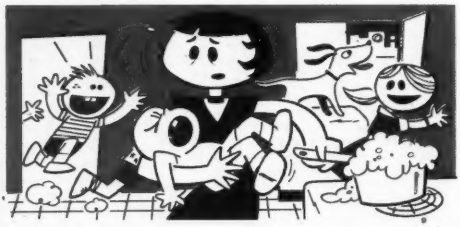
• *Lousy Housekeepers*



Just read the article Women Are Lousy Housekeepers (Sept. '57 MI) and I saw red. Just who designs and builds these unhandy houses? The men! That's who. They put the garage by the front room so the wife has to carry groceries the full length of the house. They put two or more doors in the kitchen so the family can tramp in while Mom's getting a meal. Cupboards are put up for a man's height, not a woman's.

A few bends and stretches, says Mr. David, helps keep us slimmer. Did you ever try doing housework with babies around that cry for attention? A disgusted housewife.

Mrs. J. Davies
Medford, Ore.

• *Liked Moon Riddle*

Congratulations are in order on your fine article The Riddle Of The Moon (Sept. '57 MI). I enjoyed your article and have had many of my friends read it. I was very glad to see that there are some people who still "dig" astronomy rather than rock and roll.

J. Alter
Flushing, N. Y.

• *Alisa V*

I was mightily impressed with the Alisa V owned by Elmer H. Bobst (Dear Santa: Here's What We Want For Christmas.—The Editors, Aug. '57 MI). It seems to have everything, including the proverbial kitchen sink. I don't think I'd mind such a Christmas gift either. In the article you mentioned all the vital statistics except the price. "Don't ask!" you proclaimed.

Well, I would like to ask. How much moola for the craft?

Hal Lapkoff
Silver Spring, Md.

We have learned that it cost approximately $450,000 to build the Alisa V. However, it is all specially made of laminated wood and you could buy a steel version of this yacht for "only" $350,000 to $375,000. Incidentally, to build a replica of the Alisa V would cost about $500,000 today.

• *Cat's Meow*

Mr. Harvey Gardner's article All About Cats in the Sept. '57 issue of MI was priceless. We enjoyed it immensely.

One thing you may find interesting: that cat who was reported to have purred for days and died—there may have been an explanation. When we had our ocelot anesthetized for surgery a while ago we were watching her as she lost consciousness.

Suddenly I was aware that she was purring.

[*Continued on page* 29]

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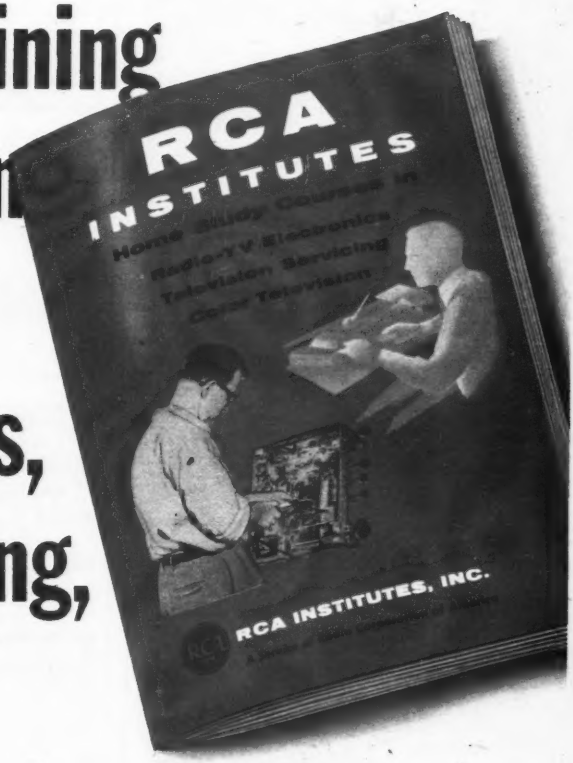

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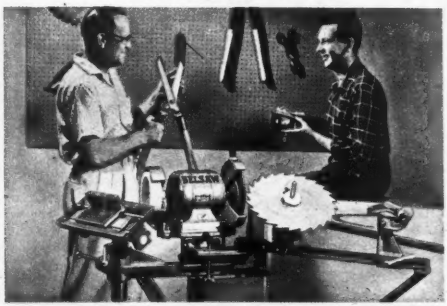

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You get one million bucks in $10's, $20's, $50's, $100's, etc. denominations—enough to keep your friends laughing and happy for months—This offer is limited. Only $4 million dollars to a customer. Our supply of this loot is limited—so rush your order. . . . One Million Dollars only $2.98. Four Million Dollars only $10.00. If not delighted keep $100,000 for your trouble and return the rest of the money for a full and prompt refund. Send to —BEST VALUES CO., Dept. 123, 403 Market St., Newark, N. J.

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BALANCED TO STICK! special $1.35

MALAYAN HUNTING KNIFE used for killing game. Exciting target sport. Easy to learn! Fun indoors or outdoors! EASY TO THROW!

Fun, Thrills, Excitement

Learn this Sport! Easy to throw accurately with our clear instructions. Beautiful, heavy-duty 12" knife. Tempered steel. Tough rawhide-bound handle. Rare souvenir. unusual bargain. At sports dealers or send $1.35 (3 for $3.98)
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WE PAY $3.50 lb.

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GROW MUSHROOMS. Cellar, shed and outdoors. Spare or full time, year round. We have over 25,000 customers. FREE BOOK. Washington Mushroom Ind., Dept. 63, 2954 Admiral Way, Seattle, Wash.

Dear Editor

[*Continued from page 26*]

I mentioned it to the veterinarian who leaned over and listened. "Oh, that's just her uvula flapping," he said.

So perhaps your cats weren't purring, but their throats were in such a position that the breathing made it sound that way.

Mrs. Harry Cisin
Long Island Ocelot Club
Amagansett, N. Y.

For the uninformed, Webster defines the uvula as "The pendent fleshy lobe in the middle of the posterior border of the soft palate."

● *December MI Mystery*

Two planes, one above the other, are flying due west over two plane watchers, A and C. C is located four miles due west of A, measured horizontally. When the planes are vertically above C, A observes an angle of 12° between the two planes and the top plane is one and one-quarter miles, vertically, above the lower plane. How high is the lower plane above C and what angle does it make with the horizontal, measured from A?

William Reisner
Glendale, Calif.

We hope this problem isn't too simple for some of our readers who have been writing in and scoffing at our "easy" mysteries.

● *October Mystery Solved*

Mystery: If the natives of the Weejee Islands rate two spears as worth three fishhooks and a knife, and will give 25 coconuts for three spears, two knives and fishhooks together, how many coconuts will they give for each article separately?

Solution: A fishhook would get you two coconuts; a knife, four; a spear, five.

John Rafter
Houston, Texas

● *Notice*

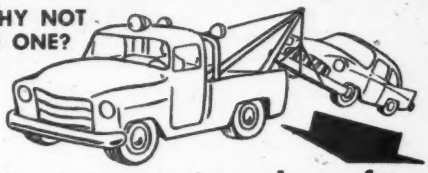
The correct address for Bob Prosser's Turtle Lake Telephone Company appearing in Old Telephones Ring Up New Profits in the Nov. '57 issue of MI, is Turtle Lake, Wis.

Letters Editor

When answering advertisements please mention
MECHANIX ILLUSTRATED

America Is Short 100,000 Auto Mechanics!

WHY NOT BE ONE?



It's easy to train at home for a TOP-PAY JOB with a BIG FUTURE!

Stop worrying because you need a better job—or because you need more pay! *Over 100,000 jobs are waiting right now for newly-trained auto mechanics.* Here's why: There are 60 million cars and trucks on the road—*and one-third need heavy repairs.* Over 7 million new vehicles are made annually—also need service. No wonder the demand is *big* for auto mechanics—why pay is *tops, work is steady!*

YOU CAN LEARN AUTO MECHANICS in months, at home in spare time. Let CTI train you with its famous Shop Method. It's easy. It's fast. *Mail coupon for free details.*

You Practice with Tune-Up Kit and Tools

(Included with training)

CTI training is practical. You get a valuable Tune-Up Kit, the kind that experienced mechanics use to locate engine troubles. You receive a Compression Tester; Vacuum Gauge & Fuel Pump Tester; Ignition Timing Light; portable steel case. You also get a set of professional mechanic's tools, including socket set with extension. You'll use instruments and tools to practice, to make repairs, to earn money as you train. (Note: *Diesel Mechanics* or *Body-Fender Repair* instruction too—at no extra cost.)

Many Students Make Money as They Train

Soon after they begin training, many students fix cars for others. They not only acquire useful experience—they also earn money. Their earnings help pay tuition, buy shop equipment, start many in business. *Mail coupon for details.*

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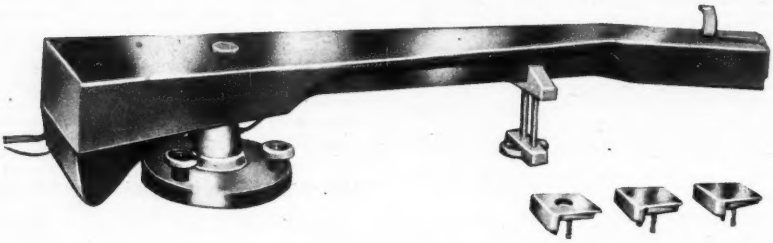
City_____ Zone_____ State_____

MAIL TODAY

HIGH FIDELITY

15-WATT AMPLIFIER by Sonotone Corp., Elmsford, N. Y., has six inputs for magnetic and ceramic phono cartridges, tape recorder, AM and FM tuners and other equipment. Price is $79.50.

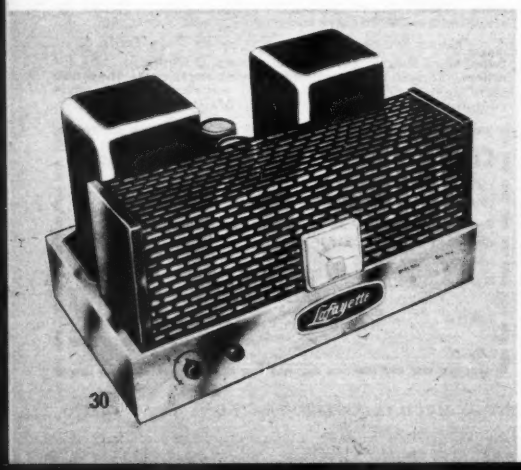
What's New In High Fidelity

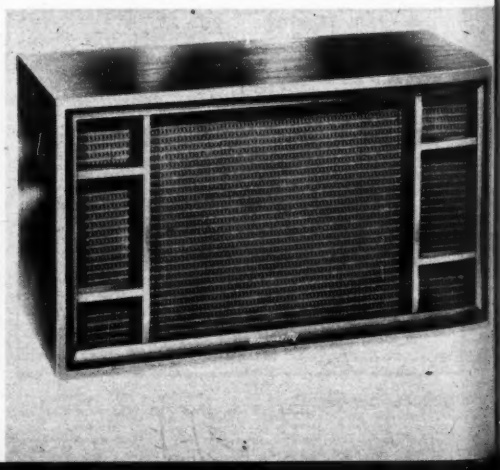


TONE ARM is viscous-damped, employs individual cartridge adapters for correct stylus pressure. Argonne Electronics, 27 Thompson St., N. Y. 13; $19.50.

AMPLIFIER produces 70 watts continuously, takes instantaneous peaks of 160 watts. Lafayette Radio, 165-08 Liberty Ave., Jamaica, N. Y. Complete, $94.50; kit, $69.50.

SPEAKER SYSTEMS provide high fidelity from compact, convenient-to-locate enclosures. University Loudspeakers, Inc., 80 South Kensico Avenue, White Plains, N. Y.





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Here at last is the battery science has been trying to perfect for more than 100 years! Think of it—now you can install in your car the most powerful battery ever built, then forget it completely for at least ten long years!

BELL TELEPHONE LED THE WAY!

Bell Telephone's invention of the famed Silicon Solar Battery led to the discovery of the SILICON WATERLESS BATTERY. The activated silicon incorporated in this revolutionary new battery has the same properties as that used in the Bell Telephone battery [illegible] possesses almost limitless power!

50,000 STARTS A YEAR FOR 10 LONG YEARS!

What other battery stores such tremendous reserve power that it can deliver the equivalent of more than 120 starts a day for 10 years or more? The SILICON WATERLESS BATTERY did it in the toughest battery test ever devised by any laboratory—made a total of half a million starts!

NEVER USES WATER...
NEVER OVERHEATS...
NEVER FREEZES...
NEVER NEEDS ATTENTION

Every SILICON WATERLESS BATTERY is permanently sealed at the factory. Patented breather valves replace the customary battery caps and are never removed. You never add water, you never even bother to check—you install it and forget it! Cells cannot be damaged by carelessness.

Exhaustive tests under conditions ranging from the mid-summer heat of Death Valley to the 40° below zero cold of the Arctic, prove that the SILICON WATERLESS BATTERY does not overheat nor freeze—*delivers full power at all temperatures.*

The SILICON WATERLESS BATTERY is spill-proof—no acid to handle. Possessing amp-hour capacity greater than original equipment batteries, this battery retains its full power even through long periods of idleness.

- The **SILICON WATERLESS BATTERY** delivers quick starting power for 10-ton truck engines at 70° below zero—far more than your car needs.
- The **SILICON WATERLESS BATTERY** makes your car lights burn brighter by Westinghouse light meter test.
- Tachometer R.P.M. tests prove that the **SILICON WATERLESS BATTERY** turns your engine over faster.
- The **SILICON WATERLESS BATTERY** is powerful enough to start your car engine 50,000 times a year for at least 10 years!
- In competitive laboratory tests, the **SILICON WATERLESS BATTERY** produced 400% more power than one of the nation's top-selling, nationally-advertised batteries!
- The above statements of fact are certified to be true in every respect.

READ WHAT USERS SAY!

"I used the battery you shipped me in starting 5 cars in 40° below zero weather and the battery did not lose any power!"
E. F. F., Rexford, Montana

"On January 23rd, the official temperature at 8 A.M. was 32 degrees below zero. There were about 20 cars in the parking lot and my car was the only car whose battery turned the motor over fast enough to start a car."
D. J. W., East Hartford, Conn.

"I have given the SILICON WATERLESS BATTERY some very rigid tests in severely cold weather. Last night it was 22 degrees below zero. My car stood outside and had instant starting power after 10 hours in that cold."
H. H. A., Winnipeg, Manitoba, Canada

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Make of car_____ Year & Model_____

It's Coming!

New miracles of science that you'll be seeing soon.

A FROZEN hot dog sandwich that can be transformed into a steaming hot frank within 20 seconds has been developed by the meat laboratory of Ohio State University. The quick-heating hot dog comes in a carton with two disposable electrodes which, when plugged in, thaw and heat the frozen meat in a jiffy.

A British firm, Plessey Co., claims to have produced a material that cannot be detected by radar. It is said the new material absorbs radar impulses, rather than reflecting them back to the receiver. It is expected the material will be used on missiles and other weapons.

Russian automobile manufacturers are said to be experimenting with a small rear-engined car to be called the Byelka (Squirrel). It has an air-cooled motor and it is claimed it will go 145 miles on a gallon of gas!

Accounting machines that can actually read printed letters and figures are being developed for several big companies. They are based on magnetic ink to be read by electronic scanners. It is expected they will get their first try-out in banks to sort checks.

The Army Transportation Research and Engineering Command is working on a nuclear-powered off-road land train capable of carrying 150 tons at 20 mph. The long sled will carry its reactor in the rear and crew's quarters up front. Each wheel would have its own motor. The train will be used for long hauls in remote areas.

A synthetic glue with a strength of 8,000 lbs. per square inch when cooled to 450° below zero has been developed by the National Bureau of Standards. The material is an epoxy resin and is used to bind together copper coils of an electromagnet used in studying tiny atomic particles.

Colored highways are being tested at several Army installations in the New York City area. Wide yellow and red bands are painted where the test roads approach intersections. The Federal Bureau of Public Roads is considering it for use on national highways.

Four hundred pounds of shark can be knocked out in less than a minute with a water pistol full of a narcotic known as M.S. 222. The drug is squirted into the shark's mouth or sprayed over the gill openings. The shark begins to revive in about 30 minutes and is unharmed.

The United States expects to have the world's first atomic-powered passenger-cargo ship ready for sea in 1960. It will be able to steam 350,000 miles on one charge of nuclear fuel. Cost will be about $42,500,000.

A German firm is marketing a "perfume" for the African trade which is said to repel hippos and elephants. The scents of lions works well against hippos, and elephants stay clear of a "human" scent.

A lightweight gas turbine engine, weighing only 326 lbs. but delivering 286 hp, is under development by the U. S. Army. The little engine is only 44 inches long and 29 inches high. It will be used to generate electrical power in an engine-generator "power package" delivering 100,000 watts at 400 volts.

A new method of sterilizing surgical and hospital equipment has been developed by the Abbott Laboratories. Instead of heat, ethylene oxide vapor is used. It permits the sterilization of materials like plastic.

The Ford Motor Co. has announced the discovery of a chemical for purifying automobile exhausts—one of the main causes of smog. The chemical is vanadium pentoxide which, the anti-smog researchers say, eliminates more than 80 per cent of unconsumed hydrocarbons in a car's exhaust gases.

Ultrasonic echoes from the human body can be used in the early diagnosis of cancer, a group of Japanese researchers reported. The echoes are produced by pulsating ultrasonic waves which are beamed into the body and then bounced back from various internal organs much in the manner of reflected radar waves. Different types of tissues give different echoes and the strength of the echo indicates the diseased state of the tissue.

—Lawrence Sanders

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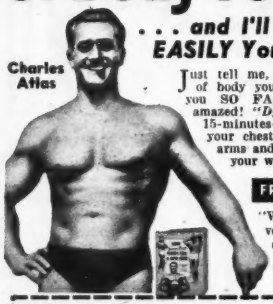

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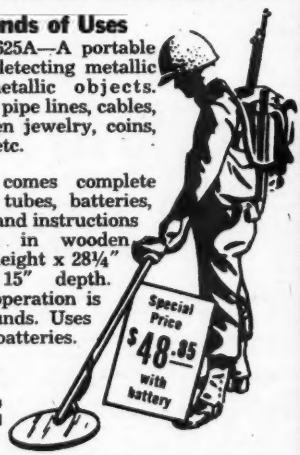

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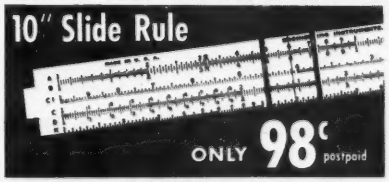

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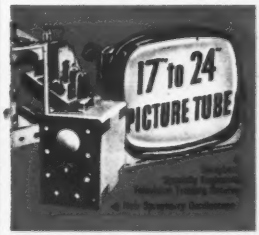

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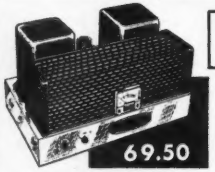

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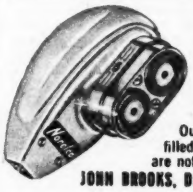

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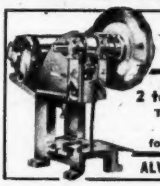

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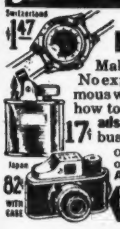

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SENDS—RECEIVES UP TO 10 MILES AS SHOWN with built-in antenna or hundreds of miles with outside antenna! Works on 80 and 40 meter (Novice) amateur radio-bands—also Aircraft and overseas broadcast (3 to 8 mc). PORTABLE SELF-CONTAINED POWERED WITH STANDARD PORTABLE RADIO BATTERIES. NO AC PLUG-INS NEEDED! Take it with you everywhere you go—on trips, vacations, camping—Keep in contact with home, friends. Has 5 watt crystal controlled transmitter—Sensitive Regenerative Receiver. Send-Receive switch. Wt., only 3 lbs. Size, only 6"x4"x4". TESTED—PROVEN—SIMPLIFIED—PRACTICAL—Full information given on quick easy to get license. **SEND ONLY $3.00** (bill, ck, mo) and pay postman $11.95 COD postage on arrival or send $14.95 for postpaid delivery. Complete kit includes all parts, tube, coils plastoid cabinet, easy instructions. (Set of batteries $2.95; crystal $1.25.) COMPLETELY WIRED AND TESTED POSTPAID $19.95. A regular $49.95 value—Order now before price goes up. GUARANTEED—AVAILABLE ONLY FROM: Western Radio, Dept. BNI-12, Kearney, Nebr.

FUTURA

Scaled after the famous Lincoln Futura, this model has an electric motor, lights, indicator and plastic canopy. For full-scale plans send 50 cents to MECHANIX ILLUSTRATED, Fawcett Bldg., Greenwich, Conn. Specify Plan M-237, Futura.

YOU CAN BE AN IMPORTANT MAN WITH A GUARANTEED FUTURE...IN THE U.S. AIR FORCE

More than just a technician, the Air Force specialist is a man of responsibility and importance. He is the one the Air Force *depends on* to maintain and operate its increasingly complex equipment. But with this responsibility, he also knows a great sense of pride—and a guaranteed future, both professionally and economically. As a technician, you, too, can have this satisfaction and assurance—in the U.S. Air Force. See your Air Force Recruiter, or mail the coupon.

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Please send me more information on the Air Force Prior Service Program.

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OLDSmobility

EXCITING "ROCKET AGE" STYLE THAT REFLECTS YOUR OWN GOOD TASTE!

OLDSMOBILE'S SUPER 88 FOR '58 . . . GEARED FOR SUPER PERFORMANCE!

A 1958 Oldsmobile is waiting for you . . . a car that's in a class by itself! A new Rocket Engine car . . . a magnificent performer in the famous Rocket tradition, and offering the *greatest improvement in fuel economy* in Oldsmobile history. Beneath the exciting distinction of line and color . . . beyond the renowned power plant . . . are new expressions of Oldsmobile's style and engineering leadership. For example, New-Matic Ride* (Oldsmobile's *true* air suspension) is the greatest advance in riding comfort since air was first put in tires! And this is only the beginning. In every way, this is *your* car for this mobile era!

OLDSMOBILE DIVISION, GENERAL MOTORS CORP.

*Optional at extra cost.

OLDSMOBILE

1908-1958

FORWARD FROM FIFTY...INTO THE ROCKET AGE

SEE YOUR NEAREST AUTHORIZED OLDSMOBILE QUALITY DEALER

Mail for McCahill

Uncle Tom is sorry he can't answer all his mail personally. In this column he'll answer the most interesting letters. Write to him at MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N.Y.

● *About four years ago in another Fawcett Publication, you selected the first All-American Sports Car Driving Team. As I haven't read any of your selections since then, how about a quick run-down on a 1957 sports car team? How many from the original team would still be on it?*

H. B. Carter
Chicago, Ill.

My selections for an All-American Six-Man Sports Car Driving Team for 1957 are as follows: Phil Hill of California; Masten Gregory of Kansas City; Carroll Shelby of Texas; John Fitch of Connecticut; and Walt Hansgen and Lake Underwood, both from New Jersey. Hill, Fitch and Gregory were on the original team selected in March '54. Walt Hansgen was on that team as a reserve. The newcomers are Carroll Shelby and Underwood. Shelby, Gregory and Hill are America's best at pushing Italian tinwork, while Hansgen and Fitch are Jag specialists, with the versatile Fitch also a Corvette jockey. Lake Underwood is the undisputed master of the Porsche. It is my sincere belief that these boys will take 95 per cent of all the major sports car races held in America in 1958 with the exception of the Sebring race where foreign teams enter *en masse*.

● *I don't know what it is, but very often when I get behind the wheel of the family car I start running into birds. This is very annoying and bothers me.*

Mrs. F. O. Fletcher
Toledo, Ohio

Annoys hell out of the birds, too.

● *Please settle an argument. Here in Norfolk the climate is considered mild and my wife thinks I should build a $1500 garage to preserve our car. I can build a carport behind the house myself for about $200. So is it worthwhile to spend the extra $1300?*

M. Tucker
Norfolk, Va.

Definitely not—unless you're the type who likes to keep a car for 30 years or more. Modern car paints will stand up for several years under a carport just as well as they will in a garage. If you should trade your car in every three or four years, a garage would be a waste of money. I personally have a three-car garage and a two-car carport alongside the house. I haven't put one of my cars in the garage for years, unless I was going away for several months and leaving one behind. Dew and the direct rays of the sun are the two big car finish destroyers. Avoid them as much as you can and the finish will last and last.

● *Can you think of a single reason why sports cars, as popular as they seem to be, are still comparatively rare even though everyone knows they're more fun to drive?*

Ted Miles
Baltimore, Md.

The same reason we've been giving for years—not enough usable room. We've written for almost ten years in these pages that the most-needed sports car was a model that would hold four passengers. As Jim McMichael says, "If they made a good four-passenger MG I might still own one today instead of my VW. And the MG Magnette is not a sports car." I might add to Jim's thoughts, "So would I." There are two sales up the flue already.

● *In the story All About Gorillas (June '57 MI) I didn't see your picture anywhere. What's the matter, haven't you a gorilla's modeling license? (Print this letter—I dare you!)*

Donald Humphrey
New Bern, N. C.

I do have a license and I was the biggest gorilla in the joint—but they wouldn't meet my price. Besides, on the weekend the pictures were taken I was swinging through the trees around the GM Proving Grounds.

[*Continued on page* 50]

[Continued from page 49]

● *While Norway is obliged to buy some Iron Curtain products, and they are seen here in relatively large numbers, the only good word I've heard an owner say yet is that his Pobeda stays together well on the rough cobblestone and brick streets here.*

Joe Kingsbury
Stavanger, Norway

It *does?!!!*

● *What in your opinion is the best upholstery material for a car?*

Fred Brant
Minneapolis, Minn.

Unquestionably genuine leather—and don't believe all that nonsense about it putting a shine on your suits. Anything will if rubbed long enough, including mohair. So which is worse, a shiny suit or a shiny suit plus shiny mohair? Besides, Moe ran out of hair long ago.

● *I read recently that Japan is going to start sending over a small economy car called the Toyopet, I believe. Where do you think it will be sold, at car dealers' or at toy stores?*

J. Boles
New York, N. Y.

If they are as small as I understand they are, probably by mail order.

● *I hope that one day you will be able to write up the Opel Olympia Car-A-Van, as I am very interested to hear your opinion of it. I would like to say how much I enjoy everything you write. You have given me many hours of pleasant and instructive reading. Thank you very much.*

W. J. S. Jacques
Headmaster, Bantu Training School
Qumbu, C.P., Union of South Africa

We hope to test the Opel as soon as Buick has enough of them around to make them readily available in this country. Buick will be the distributor here, as you may know. The real reason I'm printing this letter is your last paragraph where you said you enjoy everything I write and that I've given you many pleasant hours of instructive reading. Believe me, of all the Headmasters I've ever had contact with (and I've had quite a few) this is the first time one of them ever had anything nice to say to me. It's quite a switch from the old "Thomas, pack your bags; you are leaving!"

● *Now that haircuts have reached a buck-fifty I've decided to let my hair grow. Why don't you do the same?*

Charlie Butler
Los Angeles, Calif.

I did but it got away from me. It grew all the way out of my head.

● *Would you please give me some information on the Continental Mark II. Is it true that the hood is sealed? Is it equipped to grease itself? Is it true that when you no longer want it that you have to re-sell it to the company?*

Russell Herter
Terre Haute, Ind.

Answer to all questions: Untrue.

● *As I sit here in my barber shop and watch the out-of-state cars go by, I have seen more small cars this year than in all the rest of my life. They are really putting them on the road, and I say more power to them. But if they don't give us better service and prices on parts, the dealers of small cars are going to really hurt themselves.*

E. Powers
Wilton, Maine

Perhaps the reason you're *sitting* in your barber shop is the price of haircuts these days —or are the prices in Wilton better? The big fault of the majority of foreign car dealers is poor service, which includes the stocking of parts. Aside from big cities, hundreds of small foreign car dealerships are operated by the rich Town Boob who wants to run around in cars that are deductible on his income tax. Aside from that he allows an occasional customer or two to buy a car. The service managers are too often adjustable wrench gymnasts with simulated Broad Street accents and little know-how.

● *I would like to try to answer Mr. Wm. A. Petrosky's letter about the proper pronunciation of "Mercedes-Benz" I hope a little better than you did. The proper pronunciation is "Merek-say-diss Benz." If you don't print this letter of mine I'll report you to the Storm Troopers.*

Wm. L. Angerer
Valley Stream, N. Y.

We weren't worrying about how to pronounce Mercedes—it was Benz that had us hung up a bit. Besides, we think you're wrong.

● *Your article on highway safety in the latest issue of MI was more than comparable to the best that Sam Clemens ever wrote. I, for one, am fully in favor of stock car racing. Let's race these cars until they fall apart and then build them to take the gaff.*

[Continued on page 52]

MEET THE BOLD

NEW PONTIAC

If you like to be first with the newest . . . THIS IS FOR YOU!

Never before have all these advances been teamed in any car you could own or drive! They have been brought together now in the '58 Pontiac especially to celebrate the Golden Anniversary of Pontiac and General Motors. You'll discover daring—*and wonderful*—new improvements in performance, handling, safety and comfort. And there's a long list of world-of-tomorrow options to choose from—so that you can tailor this Bold New Pontiac to your own personal specifications of the "ideal car". It's all ready and waiting for you at your Pontiac dealer's now. So, pay him a visit and make a clean break with the past.

PONTIAC MOTOR DIVISION OF GENERAL MOTORS CORPORATION

ONLY CAR WITH . . .

EVER-LEVEL AIR RIDE*

NEW DIRECTION STYLING

CIRCLES-OF-STEEL SAFETY BODY

QUADRA-POISE SUSPENSION

AERO-FRAME CHASSIS

TEMPEST 395 PERFORMANCE

*An extra-cost option

[Continued from page 50]

We pay hard-earned money for a car, so let's have our money's worth. Keep those spies on the job.

Doyle Garner
Chowchilla, Calif.

Mr. Garner's letter is similar to many we've already received along the same lines. All agree that the Automobile Manufacturers Association goofed when they outlawed participation in competition by the factories. When the factory teams were racing it was the most honest hour in the AMA's career—and buyers, for the first time, were getting a fair shake.

● *Enclosed are clippings from our local newspapers. Two children were burned to death due to highly inflammable seat covers.*

Mrs. F. Krantz
Philadelphia, Pa.

The clippings told how two children were playing with their father's pocket-type cigarette lighter which he'd left in the car with them. It ignited the transparent car seat covers "which exploded into flame," later igniting the foam rubber seat cushions which are also flammable. If you are a smoker, how many times while driving a car has a live spark dropped down and burned your clothing or upholstery? It happens to me all the time. If these transparent seat covers are as explosive as gasoline and you have them on your car, maybe you'd better remain in "Jump" position the next time you light up a pipe, cigar or cigarette. Now *here's* something the National Safety Council could get their teeth into.

● *If we changed and improved politicians each year like we do cars, maybe the American public would get a square roll for their dough.*

Forrest Thorpe
Jackson, Miss.

Our politicians *have* changed. They are now pushbuttoned, fluid-driven and have dual exhausts (both ears). They also have high-compressioned heads and low mental torque; and nearly all of them are fuel injectors. Of course, their skulls are tubeless.

● *Do you still hate wraparound windshields?*

F. Pierce
Indianapolis, Ind.

Yep.

● *Some time ago I read an article in which you discredited the importance of fuel economy and gave a graph showing how little it really meant over the period of a year for the average driver. I believe you stated at the time that the difference between a car that gives 18 miles to a gallon and one that gives 15 mpg would hardly buy a good dinner at the end of 10,000 miles. With the fantastic rise in gasoline prices, do you still feel fuel economy is silly? In other words, I'd like to see you justify it now.*

B. J. Lowndes
Washington, D. C.

As General Grant might have said to Curtis LeMay, "Things have changed quite a bit." When I was a kid you could buy top-grade gasoline anywhere for nine or ten cents a gallon. Years later, when I wasn't such a kid, you could still buy seven gallons of gasoline in the East for a buck. Today, with our high compression 300-hp mills, the oil companies have added an extra pump for Super Super Super. The price spread can run all the way from six to almost ten cents a gallon between regular gas and the atomic stuff. At this time economy cars are making more sense than ever before, and for a few reasons not often thought about. Hundreds of thousands of motorists in this country are living on retirement money, fixed incomes or are not in jobs that have produced more income in the face of the general rise in the cost of living. A typical 15 mpg American car (and that is average) would look rather sick in the budget department at today's gas prices when compared with a Rambler that can get 25 mpg or a Volkswagen that can get 35 mpg—and the Rambler and VW can do it on regular (non-premium) fuel. With a car that's driven 20,000 miles a year this can amount to a saving of roughly $280 with a VW! With the Rambler the savings could be as much as $225! Naturally these figures vary somewhat up and down, depending on what grade of gas the 15 mpg consumer uses. Anyway, with gas averaging around 33 cents for premium in many sections (and *much* higher in others) it's easy to see that the difference in fuel cost alone is enough to pay for all car insurance and upkeep or, in the case of the Volkswagen, five or six monthly payments a year if the car is being bought on time! •

—Tom McCahill

When answering advertisements please mention
MECHANIX ILLUSTRATED

Wonderful Start!

Lesson number one: a new set of ACs can save three times their cost in gasoline

First solo! Great day for any driver . . . and it's a great day when a new set of AC Hot Tip Spark Plugs goes into your car.

Here's why: the long, thin, recessed "Hot Tip" insulator heats faster to burn away carbon, oil and combustion deposits. This exclusive AC anti-fouling action assures efficient fuel combustion—saves as much as one gallon of gasoline in ten. In an average year's driving this would pay for a new set of AC Hot Tip Spark Plugs three times over.

ACs are factory equipment on more new cars than any other make. Install new ACs every 10,000 miles!

GM FORWARD FROM EIFY

AC THE ELECTRONICS DIVISION OF GENERAL MOTORS

ACTION starts with

AC

HOT TIP SPARK PLUGS

Watch Walt Disney Studios' ZORRO every week on ABC-TV

Speaking of Jobs . . .

THE MOTOR DOCTOR

HEART BEAT of a complex gear motor tells a special story to engineer Joseph Allewelt.

JOSEPH ALLEWELT is an engineer with General Electric's Gear Motor and Transmission Components Department in Paterson, N. J. Frequently he is to be seen bending over a motor on the assembly line, listening to its heartbeat with an instrument very much like a doctor's stethoscope. Allewelt goes into his Kildare routine when automatic testing equipment rejects a gear motor as not meeting rigid specifications. All the robot checker can do is sense that something is wrong with one of the motors; only the trained human ear can accurately diagnose imperfections which must be eliminated to restore a unit to first class condition. The Paterson plant makes gear motors for industrial use as well as special gearing for guided missile propulsion systems and other delicate and important defense projects. •

HELP WANTED!

A special MI public service feature

Company: Military Products Division, International Business Machines Corp., 590 Madison Ave., New York 22, N. Y.

Products or services: Large-scale, ground-based digital electronic computers for Project SAGE (Semi-Automatic Ground Environment—the country's air defense system). Company also has other defense contract operations.

History and size: IBM was established in 1914, now has a worldwide organization and employs more than 77,000 persons, of whom 55,000 are in the domestic organization. Military Products Division employs more than 8,000. Gross income in 1956 was in excess of $734,000,000.

Jobs available: Computer field engineers (no degree required) for air defense computers. These men are responsible for the maintenance, performance and evaluation of the arithmetic element, inputs and display mechanisms of the computers.

Location: Engineers will be assigned to permanent SAGE direction centers throughout the United States as the centers are completed and activated. Employment begins with 22 weeks of formal classroom training on digital computer techniques at the IBM plant in Kingston, N. Y. After field experience qualified men receive additional training.

Salary: Starting salary is based on education and experience. Full salary plus living allowance are paid during training period. Salary increases and promotions are awarded on the basis of merit.

Requirements: High school graduate plus a minimum of two years electronic technical school or equivalent experience.

Additional benefits: Sickness, accident, hospitalization and group life insurance plans and a retirement program are paid for entirely by the company. IBM employs a suggestion system, has a free education program.

For further information: Write to Mr. N. H. Heyer, International Business Machines Corp., Dept. M, Room 5346, Kingston, N. Y.

Next month: Orr & Sembower, Inc.

It's definitely not made for you if you're just looking for "basic transportation"... not this jewel in Buckskin Beige and Gold... the fabulous new FURY that actually outclasses even the FURY of other years.

That's hard to do! But this gem does it! Introducing the new GOLDEN COMMANDO V-8 engine*... 350 cubic inch, 10 to 1 compression, dual quads—a mill giving the greatest performance in Plymouth history.

*Optional, at low extra cost.

With famous Torsion-Aire Ride, featuring torsion bar front suspension, this new FURY really hugs the pavement, corners flat and stops level—without nose-dive. You don't just drive a FURY... you virtually wear it!

Don't wait until a new FURY pulls alongside at a stop light to look one over... let your Plymouth dealer show you the terrific things that happen when the builders of great motor cars set out to surpass themselves—and succeed!

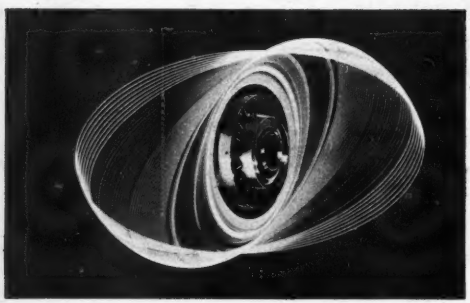
Star of the Forward Look... Fury by Plymouth

The car that uses more aircraft principles than any other land-bound vehicle yet built

When you look at that Dynastar Grille — those dual Vista-Vision Headlights—you know you're observing a completely restyled Buick.

And when you drive it, you very soon understand why it was named the B-58 Buick, after the most advanced airplane yet designed.

For this car uses more principles straight from the world of aviation than any automobile in history.

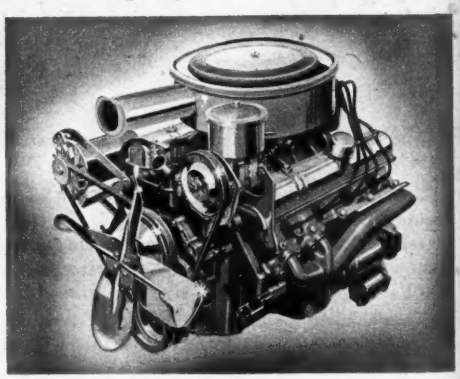


It happened that many engineering ideas that were years in development all came together in one year. And they're all here in this 1958 Buick.

Read about some of these features in this brief article. Then see your Buick dealer for a very convincing demonstration of what these features do for your driving.

1. Flight Pitch Dynaflow* Has First True, Infinitely Variable Stator — As you raise or lower your foot on the gas pedal, you automatically change the angle of the blades in this stator. You literally switch the pitch a million ways, just like today's airplane propeller. Oil, pouring through these vanes against the pump at 180 m.p.h., is redirected to suit every driving situation. You can have maximum power ratio for starting, hills, emergencies. You can have maximum economy ratio for effortless cruising. You're always in perfect pitch.

2. B-12000 Engine Develops Thrust of 12,000 Pounds Behind Each Piston Stroke— This is the most modern, the most efficient engine it is possible to build for today's fuels. Vertical-valved for compactness, this great power plant exerts a 10 to 1 compression—releases a thrust of 6 tons at each piston's power stroke. Combined with Flight Pitch Dynaflow, that results in superbly smooth and instantaneous

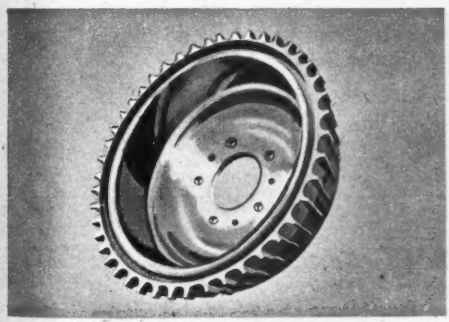


response — a sense of control utterly different from any other car of similar size and weight. Here is the first big car that's light on its feet.

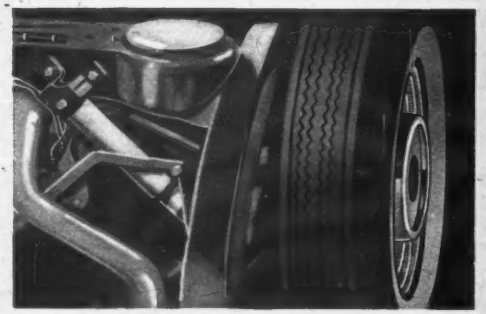
3. Air-Cooled Aluminum Brakes* Run Cooler, Make More Quick Stops Without "Fade"—Aluminum absorbs and dissipates heat quickly — so Buick engineers built the front

When better automobiles are built Buick will build them

brake drums of aluminum. On each drum, they designed 45 fins, which hurl cooling air inside the brake. Still not content, they made all brake linings wider and thicker. The result: Straighter, surer, smoother braking – especially on downgrades. Longer lining-life, even in worst traffic areas.



4. Miracle Ride *plus Buick Air-Poise Suspension Is Automatically Self-Levelizing** – Buick's new ride begins with these traditional basics: X-member frame; full-length torque tube, soft coil springs at all four wheels. These, together with new ride improvements such as longer stabilizers and outrigger shock absorbers, produce a thrilling new experience that well



deserves the name, "The Miracle Ride." This same basic Buick ride engineering was made to order for air suspension – makes Buick's new Air-Poise Suspension the world's finest. Four columns of compressed air (in place of the four coil springs) give you an infinitely variable spring rate – same smoothness, same "comeback," same ideal height regardless of road or passenger weight or placement. No other ride approaches it.

BUICK *Division of* GENERAL MOTORS

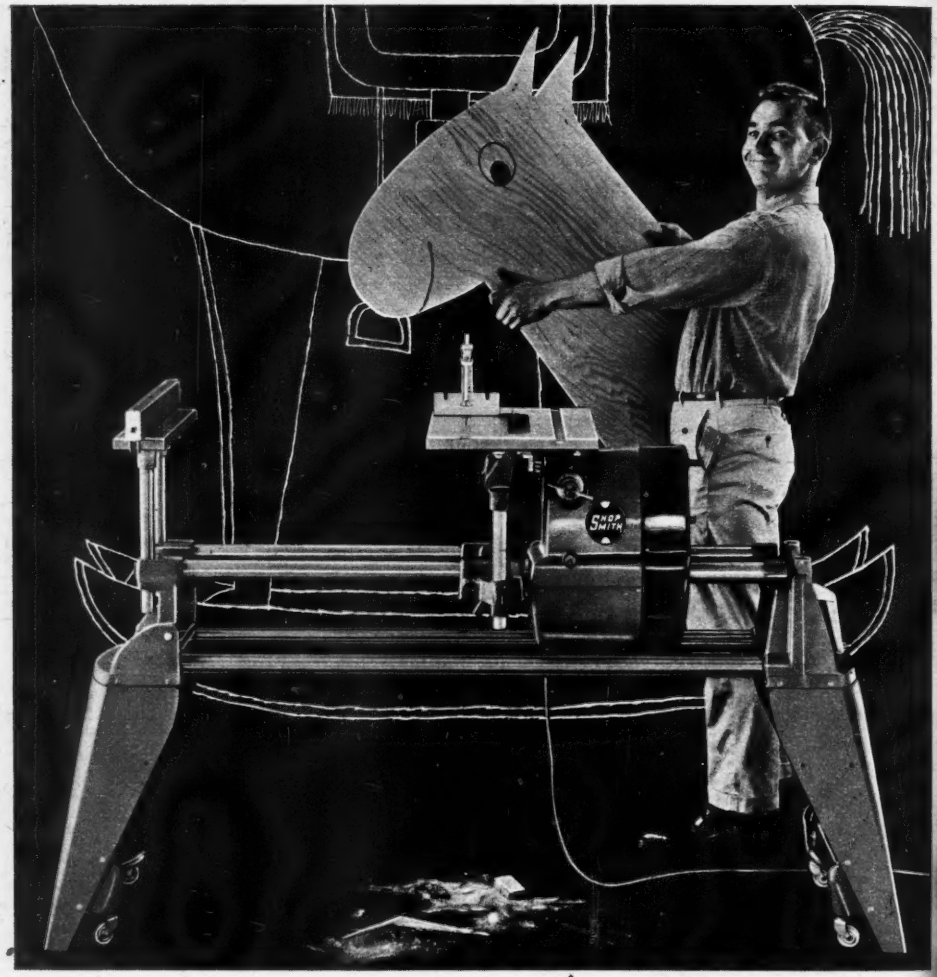
**Flight Pitch Dynaflow standard on Limited and Roadmaster 75, optional at extra cost on other Series. Aluminum Brakes standard on all Series except Special. Air-Poise Suspension optional at extra cost on all Series.*

GENERAL MOTORS GOLDEN MILESTONE

It Looks and Feels Like Flight on Wheels

The Air Born B-58 Buick

See TALES OF WELLS FARGO, Monday Nights, NBC-TV and THE PATRICE MUNSEL SHOW, Friday Nights, ABC-TV



It's amazing — the things you can build with SHOPSMITH!®

Go ahead and build a 26 foot rocking horse if that's what Junior wants for Christmas! But whatever your needs—family Christmas gifts or year round home improvement projects—you can build them with SHOPSMITH from *start* to *finish*. Only SHOPSMITH is a complete power shop in one magnificently engineered unit. No extra tools to buy. And, unlike one-speed power tools, only SHOPSMITH gives you Speed-Dial selection of correct, safe tool speeds (700 rpm to 5200 rpm!) assuring professional results with every woodworking operation. Visit your leading hardware or department store, lumber yard, or any Montgomery Ward, and find out why over 250,000 men now own SHOPSMITH. For two helpful free books on home workshops, write Magna Power Tool Corp., Dept. 303-MI, Menlo Park, Calif., or Dept. 303-MI, Box 2808, Fort Wayne, Ind. ®T.M. REG

SHOP SMITH

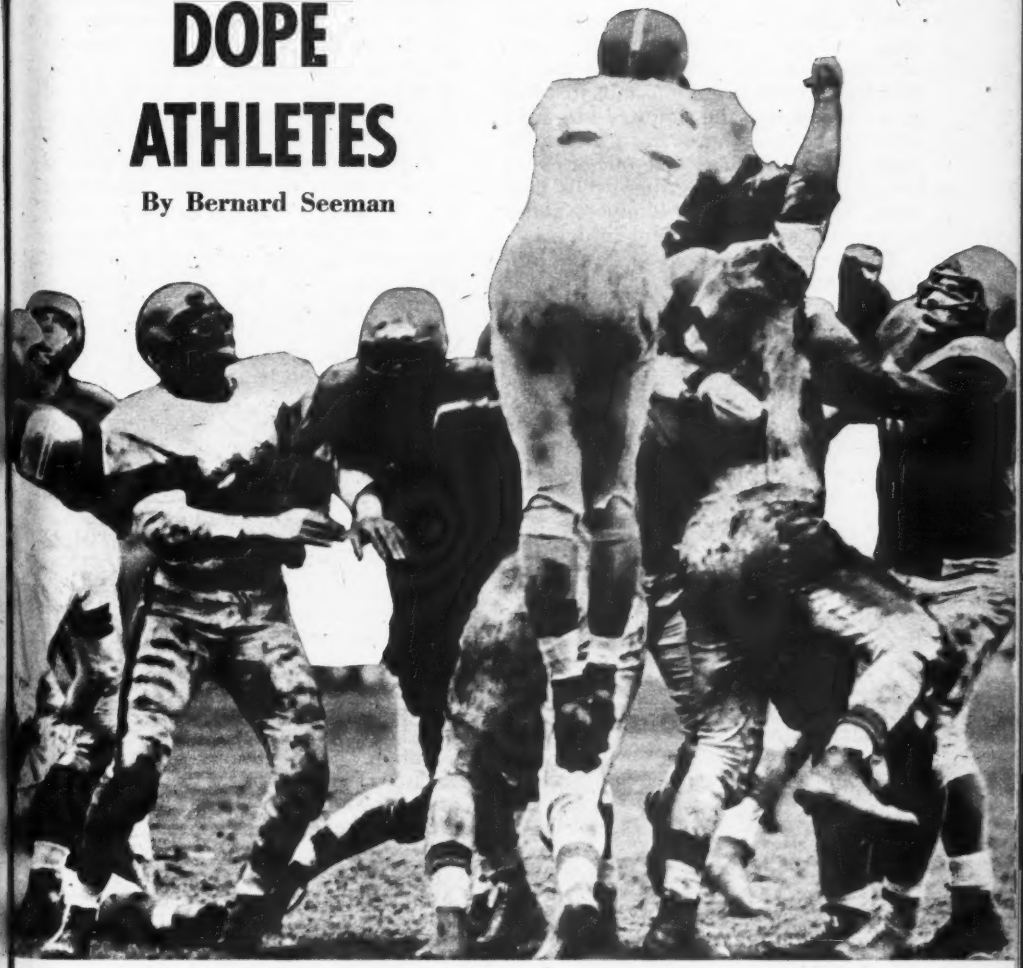
MAGNA POWER TOOL CORPORATION

ONLY SHOPSMITH LETS YOU COMPLETE THE JOB!

MECHANIX ILLUSTRATED
DECEMBER 1957

YES, THEY DO DOPE ATHLETES

By Bernard Seeman



PRO FOOTBALLERS are among the heaviest users of dangerous "pep" pills.

THE young athlete reeled off a series of sparkling quarter-mile heats. Then, in the finals of the high school track meet, he fought off a blistering challenge and won with apparent ease. He panted a little, had a slight sweat, but that ashen look of deep fatigue you would normally expect wasn't there. But he was jumpy, keyed up—and that was the giveaway.

"Did you take anything?" I asked him later.

"Sure, I take bennies," he told me after getting me to promise not to mention his name. He was referring to Benzedrine, trade name for an amphetamine derivative. "The coach wants me to win, the school wants me to win and I want to win. So I take the pills and I win. If there was anything wrong

with them the coach wouldn't give them to me."

But there is something wrong with them and that's what makes this young athlete's position so potentially tragic. And there are tens of thousands just like him throughout the country—in high schools, colleges and in professional competition. At least one out of every ten of them, by taking these pills they think are harmless, is likely to suffer serious physical or mental injury.

The dangers involved in dosing athletes with "bennies" have been stated by Dr. Leonard I. Gordon. Dr. Gordon is a medical consultant to Wm. Douglas McAdams, Inc., which publishes *Scope Weekly,* a medical newspaper noted for its outstanding material on the medical aspects of sports.

"In the first place," says Dr. Gordon, "no doctor would prescribe any amphetamine to a patient who had high blood pressure, coronary artery disease, arteriosclerosis or any emotional disturbance." But when an athlete pops a pill into his mouth, the coach doesn't usually ask a doctor to examine the boy first. A kid with a stitch in his side might be suffering from coronary artery disease but how many coaches have the athlete who gets a stitch gone over by the school physician?

"As a result," says Dr. Gordon, "possibly one out of every ten athletes taking these pills shouldn't be, for purely medical reasons—and more than one in ten have emotional reasons for not taking them. When you consider that tens of thousands of athletes may be taking these pills, then thousands of them are being done possible damage. That makes it a very serious problem."

DR. HERBERT BERGER, narcotics expert who sparked investigation.

The possible damage takes three forms. The pills may cause either high or low blood pressure, irregular heart beats or extra heart beats. They may also cause nausea, vomiting, loss of appetite or other gastro-intestinal disturbances. Finally, the pep pills can do neuro-muscular or emotional harm. An athlete taking them might go into convulsions, or even suffer from delirium and hallucinations. Amphetamine actually can make people see things that aren't there—like the pink elephants of the alcoholic.

"The most serious thing that can happen," declares Dr. Gordon, "is an exaggeration of suicidal or homicidal tendencies in emotionally agitated individuals. That is possibly the most frightening aspect of all."

A coach letting an athlete take a pep pill may indirectly be committing murder. True, amphetamine doesn't do damage in every susceptible case and the damage it does is usually of short duration. But the risks are always great, especially when there are medical and emotional reasons why the amphetamine should not be used. In those cases the damage can be very grim.

One doctor has already had to treat athletes who showed bad effects after taking amphetamine pep pills and calls the situation "a national scandal which the coaches, trainers and other people who make their living from sports are trying to hush up."

The whole question of doping our athletes has been festering under the glorified surface of the sports picture for years. But even after a young basketball player in a small midwestern high school collapsed several years ago and spent three months in the hospital, there was no outcry. And following the admission of the basketball coach of the school, that he had been giving his

athlete take one may indirectly be committing murder."

athletes amphetamine pep pills for some eight years, sports writers generally preferred to gloss over the situation, pretending they didn't see anything wrong with it.

The boom was lowered this summer at the convention of the American Medical Association when Dr. Herbert J. Berger, an internationally recognized expert on narcotics and consultant to the U. S. Public Health Service, presented the assembled doctors with "a shocking picture of a vicious practice that should be stopped."

Amphetamine, he said, was widely used by athletes and was potentially very dangerous. Boxers, charged Dr. Berger, were the worst offenders in taking these pep pills, then came professional and [*Continued on page* 160]

EUROPEAN water polo players, soccer players and bike racers use morphine, cocaine and heroin to boost performance during games.

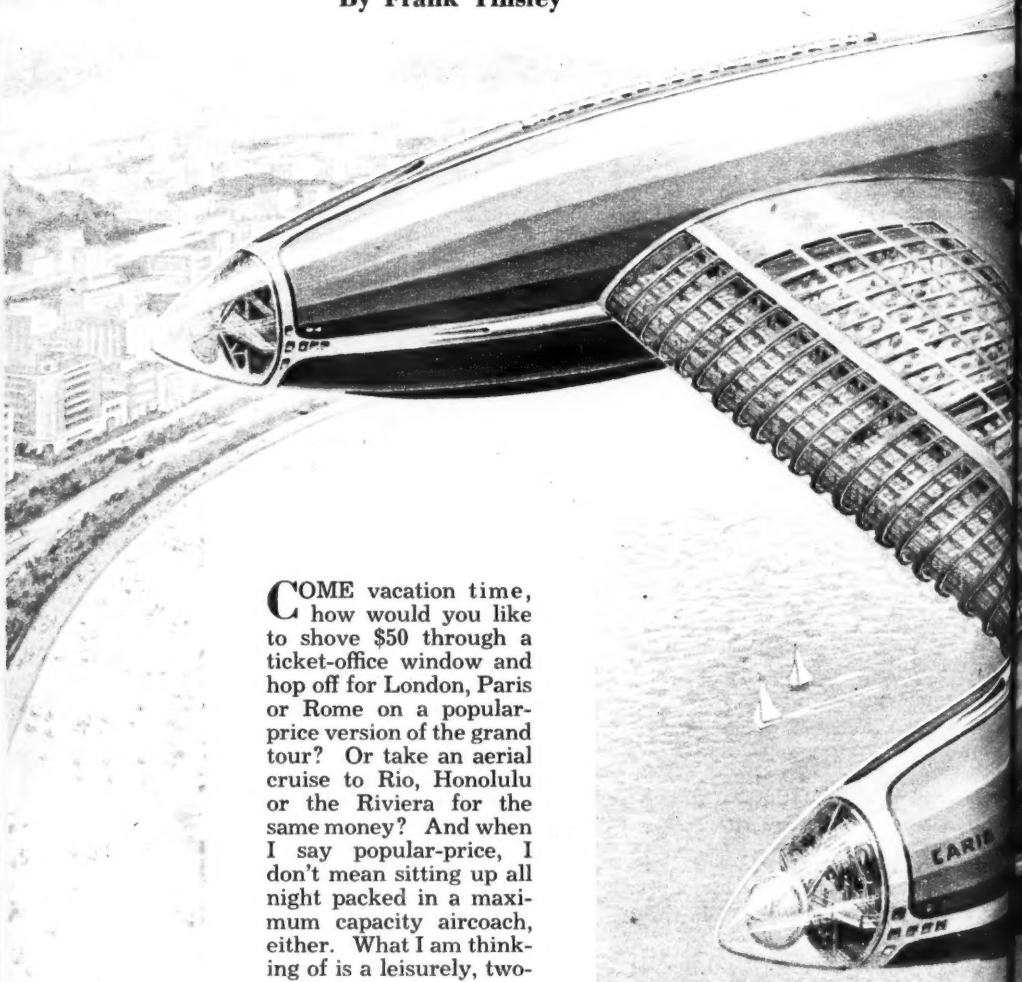
FATIGUE displayed by this runner is the natural result of extreme exertion. "Pep" pills mask fatigue; players using them can strain themselves without realizing it.

Why Don't We Build...?

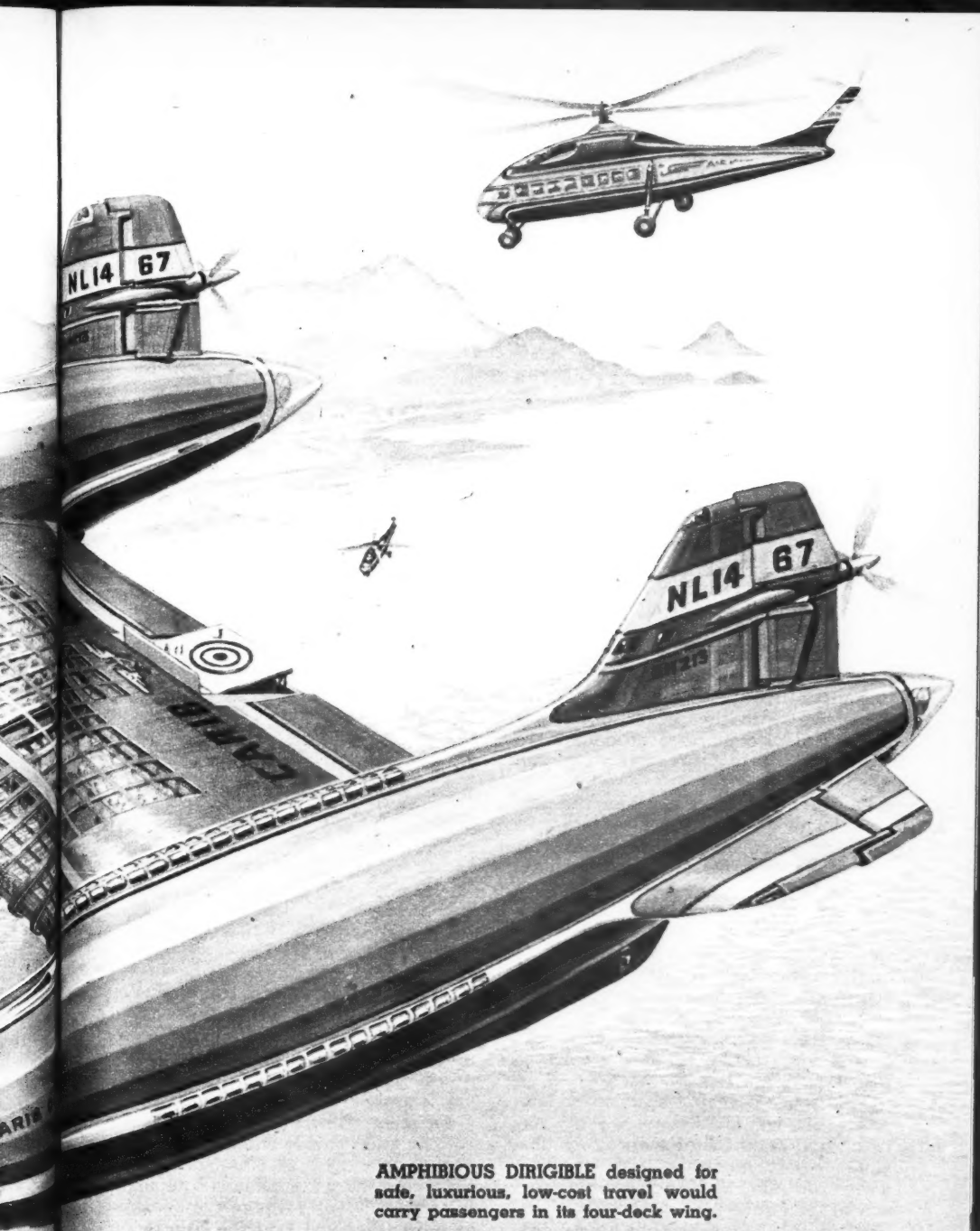
DIRIGIBLE CRUISE SHIPS

Bringing back the airships could mean world-wide vacations for everyone.

By Frank Tinsley



COME vacation time, how would you like to shove $50 through a ticket-office window and hop off for London, Paris or Rome on a popular-price version of the grand tour? Or take an aerial cruise to Rio, Honolulu or the Riviera for the same money? And when I say popular-price, I don't mean sitting up all night packed in a maximum capacity aircoach, either. What I am thinking of is a leisurely, two-



AMPHIBIOUS DIRIGIBLE designed for safe, luxurious, low-cost travel would carry passengers in its four-deck wing.

FRANK TINSLEY '56

MI's versatile dirigible will be able to put down on water or tie up at land-based towers.

day-and-one-night passage in a huge, safe, smooth-sailing airship. Free from noise, vibration, air or seasickness, with a wide choice of meals, plenty of room to move around in and a superb spectators' gallery from which to view the ever-changing panorama of land, sea and sky.

A fleet of such airships could provide not only speedy, transoceanic service but in conjunction with a chain of similarly run resort hotels, could be used for low-cost vacation cruises, conventions, etc. Just visualize the plight of today's average office or industrial worker with a two-week vacation period and limited budget. Most vacations come at the height of the summer season when resorts are jammed and rates at their top levels. Ground travel is comparatively slow and the airways expensive, with the result that either precious days or hard-saved dollars are blown away in just getting to a vacation spot.

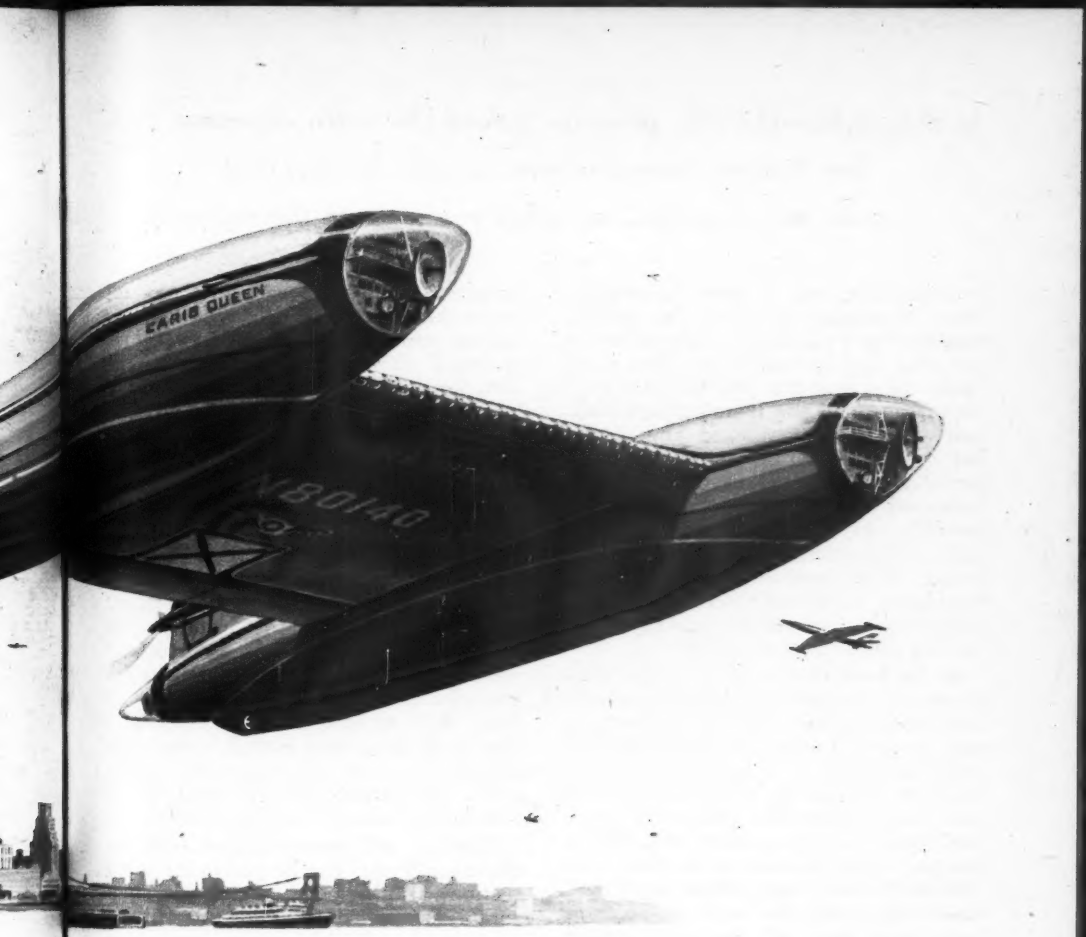
On the other hand, consider the possibilities of an airship cruise, either in the form of an all-expense package or pay-as-you-go. First of all, the hotel comfort, unique sightseeing facilities and cruise ship social life, make the journey an integral part of the vacation, not just a get-there chore. Secondly, the speed of the trip—a nice compromise between the slow steamship and the swifter but prohibitively expensive airplane—permits more days of fun and relaxation at the selected resort.

This space-covering speed brings an entire change of climate within easy reach and makes winter vacations possible for the ordinary pocketbook. Such a set-up would extend the vacation season to the entire year with far less dislocation to the average office or industry. In a dirigible cruising at 100 mph, Hawaii's tropic sands are just 24 hours away from foggy Frisco, giving the winter vacationer 12 full days before bid-

GIANT WING enclosing four decks of

ding the islands *aloha*. The New York clerical worker is within an easy 11 hours of Miami, less than eight of Bermuda and for more ambitious travelers, a 19-hour run of Mexico City or the Virgin Islands!

To meet its stringent safety specifications and provide sufficient space for ample passenger accommodations, MI has come up with a radical departure in airship layout. One of the operating requirements was that the ship be amphibious—capable of either tying up to conventional land-based mooring masts or to buoys anchored in terminal harbors. This necessitated beefing up the



passenger facilities would hold twin envelopes together and provide lift at cruising speeds.

lower portion of the airship hull and making it watertight, a decision that precluded the usual placement of passenger quarters beneath the bag.

The solution to this problem lay in designing our cruise ship in the form of a huge, aerial catamaran with a wing-shaped passenger cabin connecting two 560'x100' rigid dirigible hulls. This husky tranverse structure follows the lines of the Durand-13 high-lift wing section and is mounted at an optimum four-degree angle of attack. With a 245' chord and four decks nested within its 40' thickness, the gargantuan wing lifts its own weight at cruising speeds.

Let's step aboard this aerial giant and see what it looks like to its passengers. The ship lies at its mooring in the protected waters of New York's Long Island Sound, held down by tons of water ballast pumped into its twin keels. Lowered beneath the center of the wing's trailing edge, a retractable landing stage awaits the travelers who arrive by boat from city piers. Two stories above, protruding from the wing's upper surface, is a hinged helicopter landing pad for more affluent voyagers who prefer the faster, whirlybird ferry.

Both entrances lead to a reception salon where tickets are checked and

In this lighter-than-air pleasure palace the extra expenses are lighter, too—you save on tips by carrying your own luggage, buy what you want in the cafeteria.

travelers directed to their staterooms. Ours is number 39-B on the middle deck and we pick up our keys and carry our own bags to save a tip. The room opens off one of the lettered, fore-and-aft passageways and is similar to a Pullman compartment aboard one of the better streamliners. Painted in soft, pastel colors, it is well carpeted and upholstered and is fitted with upper and lower berths, now folded neatly out of sight. Adjoining is a snug, scrupulously clean bathroom containing a washbasin, toilet and tiled shower stall. Quickly we stow our luggage and head for the public rooms above.

At the head of the stairs we find ourselves in the bow gangway, an eight-foot wide passage built into the forward spar structure and extending the full width of the ship. A stroll to one end takes us through the port dirigible hull and along a glassed-in promenade deck that runs down the outside of the rigid gas-bag. Like its mate on the starboard side and the two "sun-bathing pavilions" stretching along the tops of the twin bags, these decks use the space within triangular side and top "keels" that reinforce the huge structure longitudinally.

Back in the wing, doorways lead into the various public rooms. The center section is split into two, huge dining halls. One is a low-cost cafeteria which doubles as a cocktail lounge and snack bar between meal hours. The other is a deluxe restaurant/night club with full service and corresponding prices.

Outboard of the dining rooms are luxuriously furnished lounge/writing rooms with adjoining movie theater, television and music rooms. Like the restaurants, these operate on a pay-as-you-go basis. Extending across the nose section of the huge wing is a glass enclosed observation veranda. Comfortable deck chairs lined up on four terraced levels permit magnificent, unobstructed views of sea and sky.

Structurally, the dirigible components of the new cruise ship are almost identical with MI's Atoms-For-Peace airship (March 1956), with the addition of a tremendously strong, X-braced connecting wing which extends right through the gasbags. The powerplant, too, is similar, except that in place of a single atomic installation, twin atom/steam/electro units are mounted in the lower hulls of the dirigibles, well away from the passenger quarters. The electric-driven, four-bladed, reversible propellers—most efficient power application at airship speeds—are contra-rotating to balance torque effects.

Controls are conventional and include a split elevator hinged to the wing section's trailing edge, plus single horizontal fins which function as outsize trim tabs. With widely separated screws and rudders, our cruise ship should turn in her own length and her almost square planform gives her enormous stability. Small props and rudders are provided for water maneuvering.

Here, then, is MI's answer to the problem of an efficient, mass transportation vehicle. It is commodious, fast enough to evade storms and can travel anywhere on earth. Inflated with fireproof helium and equipped with the latest flight instruments and communications gear, it should prove to be man's safest and most comfortable and reasonable means of vacation travel. •

KEY

1. INFLATED HULL; 2. Boat hull; 3. Atomic plant; 4. Props; 5. Bridges, radar, crew; 6. Mooring gear; 7. Passenger wing; 8. X-section of wing; 9. Observation deck; 10. Lounges; 11. Cafeteria; 12. Dining room; 13. Kitchen; 14. Movies; 15. Music room; 16. TV room; 17. Sun decks; 18. Passenger promenades; 19. Helicopter landing pad; 20. Boat landing.

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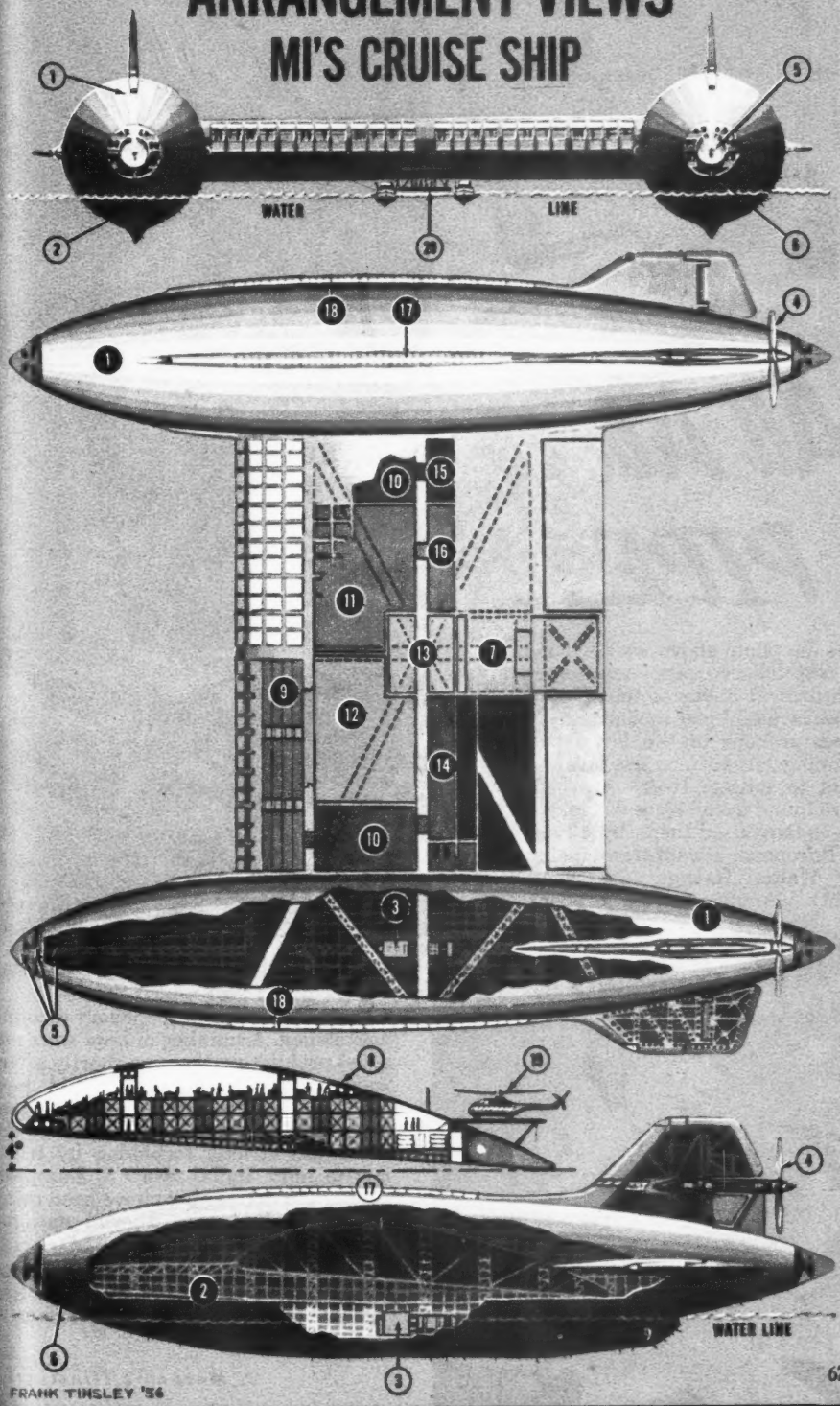
ARRANGEMENT VIEWS
MI'S CRUISE SHIP



FRANK TINSLEY '56

All About PIPES

IN the photo above we have a chin-rest tobacco pipe—for men with dentures. It is one of the specialized types available to modern smokers. Pipes are one of the few forms of smoking left to nicotine lovers who want to salvage their lungs. They were found in the New World, where the Indians used them, by a handful of European adventurers including Sir Walter Raleigh (see picture, right). Another was a Frenchman

LADIES' PIPES—coming out of hiding?

named Jean Nicot after whom nicotine was named. A number of laws were enacted prohibiting the pipe shortly afterward. Then somebody realized how much money a tobacco tax would bring in and—*try some of mine*. Although the habit was strictly forbidden by tribal law to most Indian women, European ladies in small numbers have been using the pipe for centuries. Special pipes for females are not new.

Fabulous $75,000 contest starts in January MI

RALEIGH introduced pipes in England.

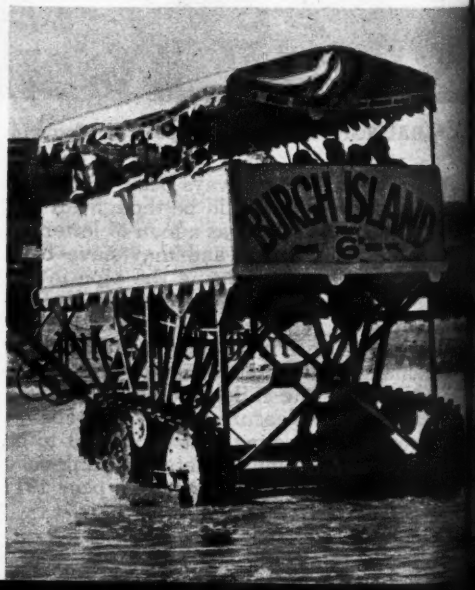
The pipe has always been the smoke for those who would be thoughtful and mature. Raleigh was a man of letters as well as of action and may have been responsible for putting the pipe in the study. But there's the pipe itself. Pipe smoking requires some attention and practice until it becomes habitual; pipes smoke best when smoked slowly and placidly. The mild discipline involved adds to the pleasure of smoking, relieves you of the feeling that you ought to be doing something and lets you think very fine thoughts. [*Continued on page* 161]

NYMPHS romp over this fancy meerschaum.

It's New!

NEW CONVERTIBLE, the Karmann-Ghia on Volkswagen chassis, retains the elegant lines of the sedan. Car was premiered at Frankfort show. Available soon in the U. S.

DANISH CAT, left, earmarked by Copenhagen tattoo artist, is conforming with a new system of identification to protect pet animals that have strayed away from home.



FUNNY FERRY that takes vacationers at Bigbury-on-Sea, England, to a pleasure spot nearby, makes the trip across the shallows easily at either high or low tide.

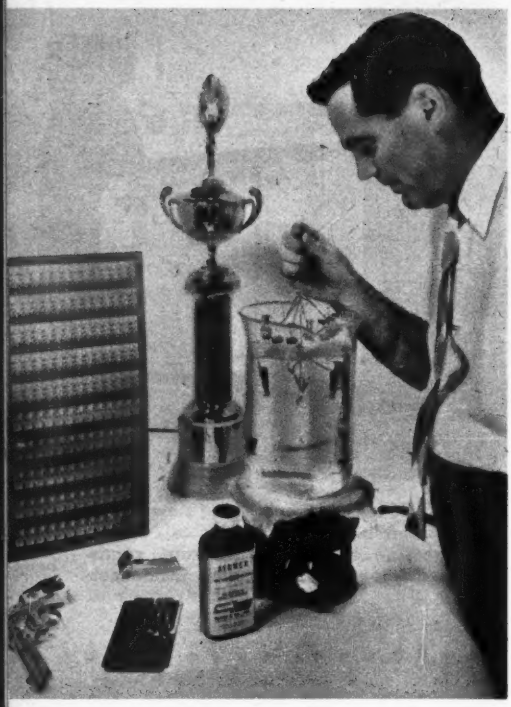
WATCHMAKER'S FIDDLE that really plays is tuned up by its maker, Martin Zahl of Berlin. Zahl has given up watches to make tiny instruments he plays in nightclubs.

REMOTE CONTROL she's using runs radio, TV and hi-fi in this Admiral combination. Unit uses no tubes or transistors, sends high frequency waves to mike inside set.

ANIMATED NEWSSTAND made by Lionel is a lively model train accessory. Flick a button and dealer comes to counter, newsboy hawks papers and pup chases his tail.

HAND PRESS that makes building blocks of earth and cement is demonstrated by Eric Carlson, the Director of the Inter-American Housing Center in Bogota, Colombia.

CONTINUED . . .

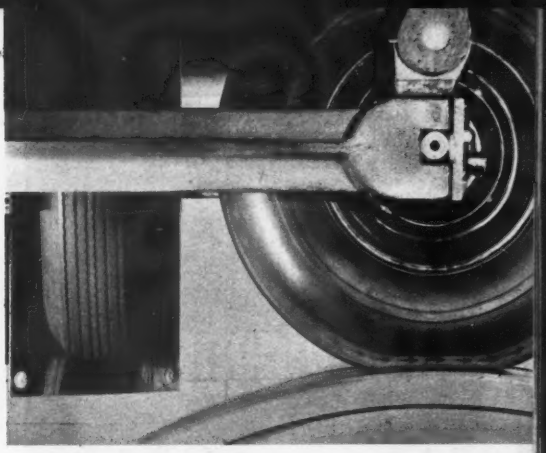


EYE ARTIST Mollie Surman, Kingston, England, is heir to 150-year family trade of matching eyes faithfully. Once she made a glass eye for a valuable pedigreed dog.

24-CARAT COAT that is better than an electroplate gold coat has been developed by Baker & Co. of Englehard Industries. Process requires only heat and a container.

SIX-CYLINDER CHRYSLER built by Chrysler Australia, Ltd., the Royal has American styling plus a suspension that has impressed down-under test drivers considerably, fully automatic transmission and power brakes.

NEW VULCAN Gatling-type machine gun delivers three times the fire power of the 20mm model brought out for the USAF last year. This 30mm model is a GE development.



110-MPH TIRE TEST run at Goodrich plant in Akron, Ohio, shows new Silvertown 125 doughnut stays round at high speeds. Note clean, even tread lines in mirror, at left.

LONG DISTANCE coin phone, German, has glass-covered slide that eats the coins as telephone time is used, lets caller know how long she has to talk, returns change.

SILVER SIGHTSEER trolley operated by the District of Columbia Transit System is the only air-conditioned trolley in the world, has hostesses to talk up the sights.

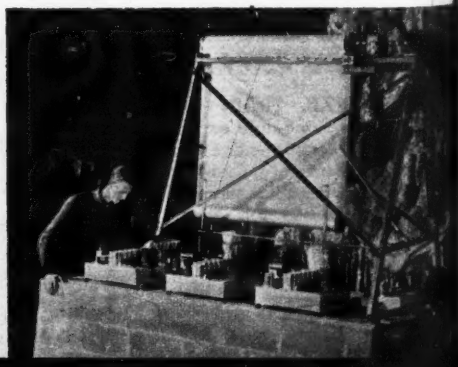
MONORAIL TRAIN running on a one-mile experimental section near Cologne, Germany, runs on top of the rail instead of below it, has top speed of 50 mph. Its inventor is a Swedish manufacturer.

UNDERGROUND Rock 'N' Roll

PROSPECTING is done with tuning forks: then rocks are "tuned" with a sander and oscillators until wavy effects disappear.

IN the Luray Caverns, Va., a physicist has created the world's only set of musical stalactites. Leland Sprinkle, Sr., got the idea three years ago when his son thumped his head on a stalactite and resonant tone resulted. The organ is a system of rubber hammers that hit the stone gongs when actuated by current passing through electric lines. The organ will not need tuning for 1000 years, so stable are cavern conditions. •

MUSIC ROLL hooked to electronic controls can play the organ automatically.



COVER STORY

PILLOW-WHEEL TRUCK GOES ANYWHERE

DAREDEVIL DRIVING is a lead pipe cinch on these limp blimp rollers.

IN the February 1957 issue of MI we presented Frank Tinsley's notion of a great travel experience of the future—a trip in a land ship that would traverse tundra, bog and desert with equal ease. Here is a new version of the go-anywhere buggy that is now in actual operation. Like the Tinsley wagon, this will run over your back without squashing you. What is the secret of the wonderful Rolligon? It all goes back to the Eskimos. Ages ago they solved the problem of hauling

SWAMP where gnats sink to their knee-caps is smooth as a turnpike to a Rolligon.

PUDGY ROLLERS spread seven-ton truck weight out to two pounds per square inch.

POLE CLIMBING truck goes like a lynx up smooth logs at a 70 per cent incline.

Squidging along on its saggy airbags over all kinds of ground, Rolligon makes off-road history.

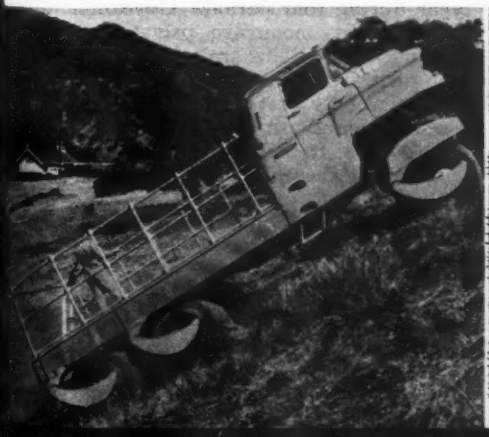
immense weights over unpaved terrain: big walrus hide bags partly filled with air. Back in 1951 an old Arctic hand named Bill Albee began figuring out a way to use similar airbags instead of wheels in a powered vehicle. The answer to this problem is embodied in the present Rolligon vehicle being made by the Albee Rolligon Company of Monterey, Calif. In the closeup of the roller on the opposite page you will see another smaller roller on top of the big one. The little roller is transmitting drive to the supporting one. In wheeled power vehicles weight and drive are transferred to the axle rather than to the top of the wheel. For working out the principle of top drive and top loading, Albee deserves at least as much credit as the Eskimo who invented the airbag. •

GREAT BIG STONES break no bones, make no obstacles for Rolligon's airbags.

WADING and floating are easy. Spinning bags only partly propel it when floating.

SPEEDING through radar trap at 41.6 mph top speed during hard surface test.

HILL CLIMB: she'll take an 82 per cent grade through weeds, 60 per cent on sand.



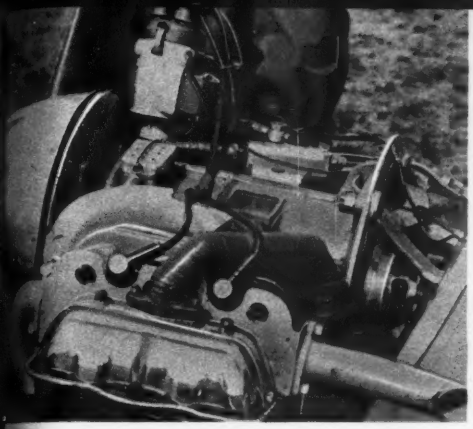
MOUNTING vehicle on rollers and supplying drive to them were the tough jobs.

French Home-Built Aircraft

Government-sponsored hobbyists are turning out truly classy light planes.

JODEL D 112 homebuilt has 65-hp mill, comprehensive instrumentation.

THE French are a sky-happy people. A Frenchman made the first balloon ascension and Frenchmen were building planes that flew before most Americans had heard of the Wright Brothers. Today amateur plane building is a government-sponsored hobby. Hardly an airport in France is without a sporty little homebuilt, owned and flown by a local butcher, baker or—well, maybe that's going too far. A citizen who wants to build his own plane in France can often get a government grant if he contracts not to sell the plane in less than three years and to fly 50 hours a year during that period. Government flying clubs encourage private pilots and builders. Plans are sold by a number of designers for the small builder who owns only a set of hand tools. Most French home-built frames are wooden. Steel tube frames need welding, of course, and these are more popular with groups of factory workers. The American Continental engine is the most popular but Volkswagen mills are used sometimes. When an amateur builder finishes his plane he gets a temporary permit to fly it in his own neighborhood for a ten-hour certification test. •

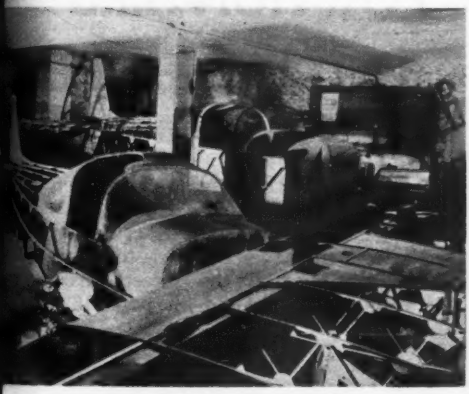


VOLKSWAGEN ENGINE as it looks installed in Jodel D 9. Engine cowling has been removed.

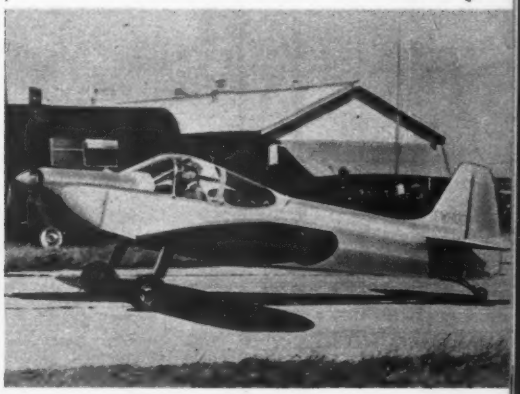
BASEMENT SHOP where these Piel Emeraudes are under construction is in heart of Paris.

JURCA TEMPETE with Jurca himself in cockpit. Note the trim moulded cockpit canopy.

PIEL EMERAUDE, with eliptical wings and slotted flaps, is popular but rather tricky to fly.



BROCHET MB 8L, steel tube frame with wooden wings, is a fine training and touring plane.



DRUINE TURBULENT with home-designed cockpit cover. Note neat VW engine installation.

Xmas Gifts FOR HUNTERS AND FISHERMEN

By Wynn Davis

DURING the 30 years I've been hunting and fishing I've learned a surprising fact about sportsmen: we seem to have everything—all the latest lures, rods, [*Continued on page* 162]

Gifts from Abercrombie & Fitch, N. Y.

KEY TO GIFTS: 1. Duck blind, $10.95; 2. Minnow bucket, $3.75; 3. Yellow shooting glasses, $21.50; 4. Compass, $6.95; 5. Rifle sight, $59.50; 6. Bait canteen, $3.75; 7. Shooting mitts, $6.50; 8. Lure saver, $1.65; 9. Pliers, $3.95; 10. Barometer, $30; 11. Knife, $7.50; 12. Silicone gun wiper, $.89; 13. Glass fly rod, $35; reel, $23.50; 14. Hand-warmer, $2; 15. Car-top rod carriers, $1.95; 16. Reel screwdriver set, $1.50; 17. Swivels, $1.20 doz.; 18. Fly-maker's scissors, $1.25; 19. Swivel-seat shell box, $9.95; and 20. Whetstone, $1.10.

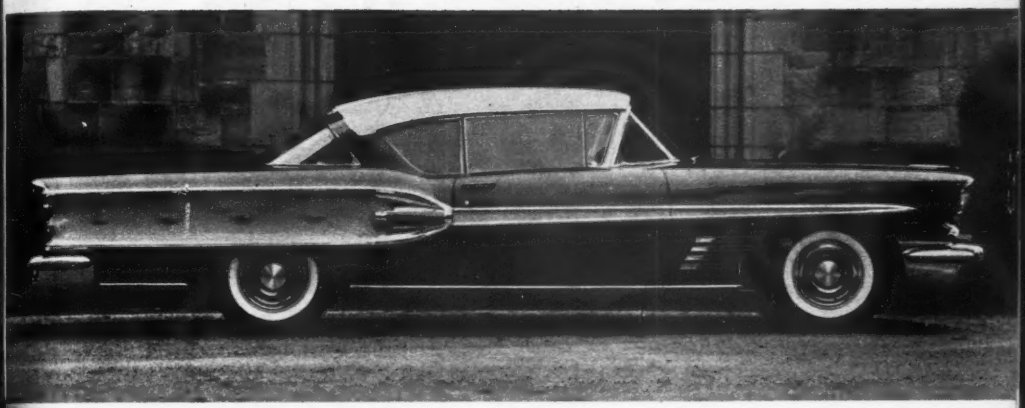
MORE 1958 CARS

CADILLAC has changed its lines and trim and accentuated the rear fins on its sedan. Eldorado Biarritz (below) takes on a snappy new facade, keeps the hidden rear bumper. For the first time, the Caddy goes over 10-to-1 compression with a 10.25-to-1 V8 engine displacing 365 cu. in.

1958 COMPARE A-TAPE

CAR (4-door sedan)	WHEEL-BASE	LENGTH OVERALL	WIDTH	WEIGHT	ENGINES AVAILABLE	SIZE OF LARGEST V8	COMPRESSION RATIO
CADILLAC	129.5"	216.8"	80"	59.1"	V8	365 cu. in.	10.25:1
CHANGE FROM '57	—	+.9"	—	—	—	—	+.25

Pontiac



PONTIAC has a new body and is three inches lower, takes on flatter look (Bonneville sport coupe shown). Top engine is 360 hp. Fuel injection and air suspension are optional extras.

1959 CARS COMPARE AT TAPE

CAR (4-door sedan)	WHEEL-BASE	LENGTH OVERALL	WIDTH	HEIGHT	ENGINES AVAILABLE	SIZE OF LARGEST V8	COMPRESSION RATIO
PONTIAC	124"	215.5"	77.4"	57"	V8	370 cu. in.	10.5:1
CHANGE FROM '57	—	+1.7"	+2.2"	−3"	—	+22.96 cu. in.	+.5

1959 CARS COMPARE AT TAPE

CAR (4-door sedan)	WHEEL-BASE	LENGTH OVERALL	WIDTH	HEIGHT	ENGINES AVAILABLE	SIZE OF LARGEST V8	COMPRESSION RATIO
OLDSMOBILE	126.5"	216.7"	78.5"	57.4"	V8	371 cu. in.	10:1
CHANGE FROM '57	+.5"	—	+2.1"	−.8"	—	—	—

OLDSMOBILE returns to one-piece rear window, has down-slanted bow, added trim and a 312-hp engine. Air suspension system is optional; radio is take-out portable (88 Holiday shown).

Oldsmobile

1958 COMPARE-A-TAPE

CAR (4-door sedan)	WHEEL-BASE	LENGTH OVERALL	WIDTH	HEIGHT	ENGINES AVAILABLE	SIZE OF LARGEST V8	COMPRESSION RATIO
LINCOLN	131"	229"	80.1"	56.5"	V8	430 cu. in.	10.5:1
CHANGE FROM '57	+5"	+4.4"	−.2"	−3.7"	—	+62 cu. in.	+.5

LINCOLN, with new body shell, is longest car on the road at 229 inches. Height is down by 3.7 inches. Immense engine now displaces 430 cubic inches and turns out 375 horsepower.

1958 COMPARE-A-TAPE

CAR (4-door sedan)	WHEEL-BASE	LENGTH OVERALL	WIDTH	HEIGHT	ENGINES AVAILABLE	SIZE OF LARGEST V8	COMPRESSION RATIO
MERCURY	122"	213.1"	81"	56.5"	V8	430 cu. in.	10.5:1
CHANGE FROM '57	—	+2"	+1.8"	—	—	+62 cu. in.	+.75

MERCURY offers refined lines, 430-inch mill and optional air suspension. The new Park Lane model (below) upgrades "Big M" line, has 125-inch wheelbase, is seven inches longer overall.

DeSOTO, with minor facelift, has its big story under the hood in a radical new 361-cu. in. engine that is 50 pounds lighter, has many novel features. A 350-in. version powers the small Firesweep DeSoto.

1958 COMPARE A-TAPE

CAR (4-door sedan)	WHEEL-BASE	LENGTH OVERALL	WIDTH	HEIGHT	ENGINES AVAILABLE	SIZE OF LARGEST V8	COMPRESSION RATIO
DeSOTO	126"	218.6"	78.2"	57"	V8	361 cu. in.	10:1
CHANGE FROM '57	—	+.6"	—	—	—	+20 cu. in.	+.75

IMPERIAL takes on dual lights, has new grille, bumper and ornaments on the fenders. Its 392-cu. in., hemispherical-dome engine now has 10-to-1 compression, other refinements producing better efficiency.

1958 COMPARE A-TAPE

CAR (4-door sedan)	WHEEL-BASE	LENGTH OVERALL	WIDTH	HEIGHT	ENGINES AVAILABLE	SIZE OF LARGEST V8	COMPRESSION RATIO
IMPERIAL	129"	225.7"	81.2"	56.7"	V8	392 cu. in.	10:1
CHANGE FROM '57	—	+1.7"	—	—	—	—	+.75

McCAHILL TESTS the '58 FORD

"FROM absolute flat profile view, '58 Ford is almost identical with '57 counterpart."

YEARS before there were income taxes, radio or this writer, a hot-rodder of the first water tried valiantly to burn up the sands at Daytona Beach. Henry Ford The First was as big a speed nut as ever floored a throttle and the millions upon millions of Ford cars that followed in the later years were the products of that hot-rodder's dream.

It seems odd, in this day of professional frownment on automotive competition, that the two biggest-selling automobiles of all time (Chevrolet and Ford) were named for a couple of out-and-out race kids—Gaston Chevrolet, a famed Indianapolis driver who was killed at the wheel of a race car, and Henry Ford who set many a speed trial record piloting Old 999. In recent times both their namesakes have been in a production and selling race to see who could rake in the most loot. For the last 20 years Chevrolet has won all but two of these yearly contests. Ford,

Six engines and just about every accessory in the book will bolster Ford's attack in the hot '58 sales battle.

By Tom McCahill

GRILLE looks similar to blown-up English Ford Zephyr. Hooded headlights and a fake airscoop round out new up-front styling.

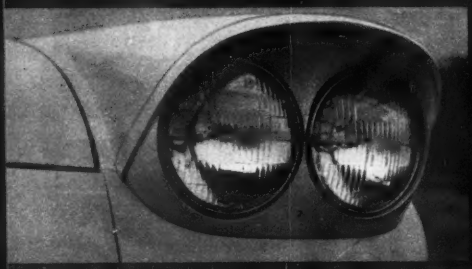
Mail for McCahill

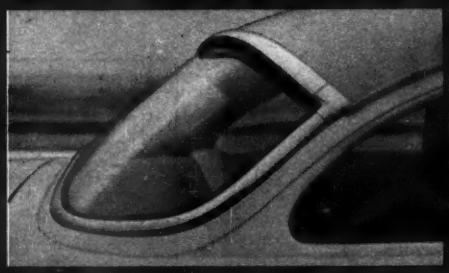
Uncle Tom's very popular question-and-answer column begins on page 49. Don't miss it!

TAIL-END treatment is truly different. Four taillights replace two of '57 and middle of trunk has been scalloped out.

Champ of '57 and Current King, will have to punch hard to outbox its old rival in the 1958 ring.

The pulse of the automotive world has been gauged for years on how Fords and Chevys were selling. No one will argue that style-wise Ford had Chevrolet lashed to the mast in '57. But '58 is a brand-new jar of cookies. Ford still features rear fins but with a flatter styling theme all





SPECIFICATIONS

MODEL TESTED:
Ford Fairlane 500

ENGINE:
V8 cylinder, OHV; bore 4.00 inches, stroke 3.50 inches; maximum torque 395 foot pounds @ 2800 rpm; brake horsepower 300 @ 4600 rpm; compression ratio 10.2 to 1

DIMENSIONS:
Wheelbase 118 inches; overall length 207.19 inches; tread 59 inches front, 56.4 rear; width 77.9 inches; height 56.18 inches; weight 3,466 pounds; standard tire size 7.50x14; gas tank 20 gals

PERFORMANCE:
0 to 30 mph, 3.3 seconds
0 to 50 mph, 7.3 seconds
0 to 60 mph, 9.5 seconds
0 to 70 mph, 13.3 seconds
0 to 80 mph, 18.0 seconds
30-60 ..... 7.2 seconds
40-60 ..... 5.6 seconds
Top speed, 120-plus mph

SPEEDOMETER ERROR:
At 60 mph on speedometer, actual speed 58.8 mph

around. In Ford's own book, entitled The '58 Ford Car Features, it says, "From any angle the '58 Fords are distinctly new." This is not exactly true. From an absolutely flat profile view the '58 Ford is almost identical with its '57 counterpart. The "new look" only comes to life when seen from the front and the rear.

The front grille angle shows a car that looks similar in some ways to a blown-up English Ford Zephyr. The new Ford now features twin headlights, a non-functional airscoop and two little dingles on each front fender which are about as useful as an elephant tail on a fox. The roofline now has seven grooves from front to rear, which are called "flutes" and remind me of the great Pinin Farina treatment given the Nash Ambassador some time ago when it appeared that Farina gave his master's touch to a clay mock-up model by dragging his finger down the top panel of the door in evenly-spaced nothings.

From dead rear the new Ford look is truly different. The middle of the trunk lid has been scalloped out and four taillights replace the two lights of '57. Personally, this writer felt that the '57 Ford taillights were excellent and distinctive. When I first saw the new Ford running around the Dearborn track last May (while out there on another test) I remarked to a company engineer, "Gad! Look at those taillights!" I believe he answered, "Yeah, but you get used to 'em."

Styling, as we found out many years ago, is something no one can be dead sure about—especially as it affects public acceptance. Styling a car is the greatest industrial gamble in the world when it involves the big production makes. For example, if a company such as Ferrari could up-schedule their famous Italian products to 500 units a year, it wouldn't be too much of a trick to find 500 buyers, regardless of what the cars looked like. In the case of Ford and Chevy, with sights always aimed at a million-plus buyers, the gamble becomes extremely important as the car must be designed to suit the tastes of a million people and not a handful of eccentrics (who may very well include this writer).

For this reason I don't feel qualified to state that the '58 Ford styling will prove a smash hit or a total flop. By this time next year we'll all know the answer. Ford has enough stylists on the payroll to make up a small city and every model is, in the considered judgment of this group, an attractive sales "Wow!" to a million American buyers. If you believe this is a white-livered, attempted "out" on my part—it is, because I think the '57 Ford looked better than the '58. I also think from a looks standpoint that the Chevy Impala for '58 will give Ford one helluva race. The big contest, however, will be between the 1958 four-passenger Thunderbird, which looks like a small Continental, and the 1958 Corvette, which looks very much like a 300SL Mercedes coupe. But let's [*Continued on page* 170]

McCAHILL TESTS

The '58 Chevy

By Tom McCahill

Dream car inspired, the Impala is "A lush piece of transportation set off on air suspension," says Tom.

NEATLY RESTYLED rear end has gone over to finless "Rear Droop School," reports Tom.

PERHAPS the most significant decoration on the 1958 Chevrolet is the crossed checkered flags on the hubcaps and body panels of the new and deluxe BelAir Impala Sport Coupe hardtop. In this year of de-emphasized performance, *dig, drag, high speed* and *acceleration* are considered unprintable words around Detroit, by unanimous agreement of all members of the Automobile Manufacturers Association. But even a backward Ubangi knows that a checkered flag stands for racing and competition—and the editors of Burke's Peerage know it means "Go, man, Go!"

Nevertheless, the AMA's official denouncement of performance appears to have hit Chevrolet harder than any of the other camps I have visited so far this year. It is still possible to buy the

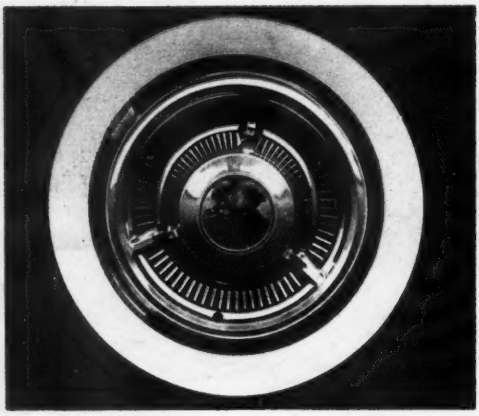
IMPALA is Chevy's new luxury barge. It has 117.5-inch wheelbase, weighs 3,598 pounds.

Traveling Man's Special (the former 150, now known as the Delray) with three two-barrel carburetors and a slightly lively cam, or with fuel injection, coupled with its 283-cubic-inch engine. There is not too much zip-up material available for the bigger 348-cubic-inch mill, however.

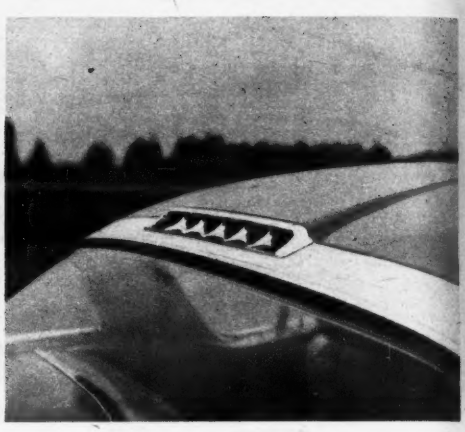
One of the questions I asked several of the engineers at Chevrolet was, "If your name were Joe Zilchdrag and you wanted a heap for unwinding white-hot at Daytona Beach next February, which engine-car combination would it be?" As things stood when I asked the question, it was generally conceded by the boys that more performance could be wrung out of the smaller engine because of valve timing and available equipment. Having dusted off my moldy crystal ball, I don't feel it makes me a genius in the least to predict that when Chevy finds out what the horrid little boys in the other auto camps are planning, there'll be some changes made that may make the checkered flag emblems more appropriate.

Chevrolet for 1958 comes in several sizes, from the six-cylinder drone right up through the new 348-cubic-inch rockbuster. The three series are the Delray, Biscayne and BelAir. With all these

GRILLE is offset by chrome squares and the hooded headlights now sport four-eyed look.



CHECKERED FLAGS embellish hubcaps, body panels on the Impala sports coupe.



LOUVERS meeting gently sloping roof ramp atop rear deck windows are strictly for show.

models, there is a bigger choice of rear ends than you'd see at the Bal Tabourin in Paris during a can-can number.

Playing it the new AMA way, the big news at Chevrolet is the Impala model of the BelAir series, which is a lush car weighing just under 3,600 pounds, built on a brand-new tubular-type chassis. This job, with a 117½-inch wheelbase, up 2.5 inches from last year, is a plush piece of transportation set off on air suspension. Air suspension, as you probably know, is slightly complicated and employs a compressor and other stuff to give this car the Levelized Ride now becoming The Big Thing in the General Motors camps. Chevys without it are suspended on four coil springs, which also do a good job of keeping your fillings in place.

There are *six* transmissions available in the Chevrolet line, a pretty staggering revelation in itself. The greatest one is the four-speed box (manual) in the fuel-injected Corvette. It is synchromesh right down to the cellar, or first gear! This is a close-ratio job which, in the hands of an expert, can be played like a water hose and promises to wet down the finest automatic transmission ever conceived. The big money-maker, though, should prove to be TurboGlide, which is as smooth as velvet underpants. Then comes good old PowerGlide, developed by Arthur Murray. Overdrive and two straight standards round out the total number to six.

One straight manual box is close-ratio and the other is wide-ratio. For our two readers on canoe duty at the headwaters of the Congo, the differences between these last two are as follows: A close-ratio shift, whether it's three, four, five or six speed, means that the difference between first, second and third, for example, is abnormally close. In the case of the close three-speed box,

SPECIFICATIONS

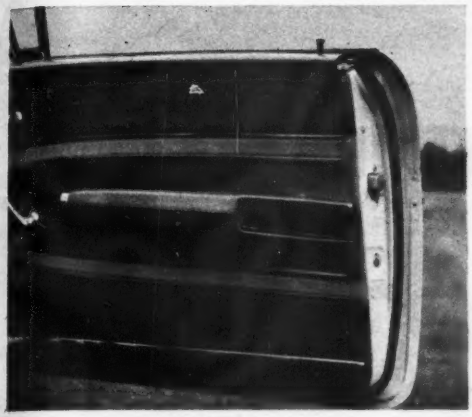
MODEL TESTED:
Impala Sport Coupe

ENGINE:
V8 cylinder, OHV; bore 4.125 inches, stroke 3.25 inches; maximum torque 355 foot pounds @ 3200 rpm; brake horsepower 280 @ 4800 rpm; compression ratio 9.5 to 1

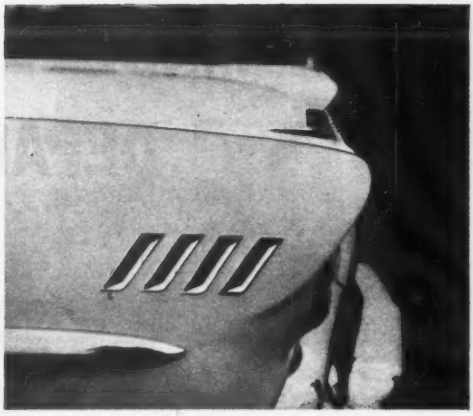
DIMENSIONS:
Wheelbase 117.5 inches; overall length 209.1 inches; tread 58.8 inches front, 58.8 rear; width 77.7 inches; height 55.7 inches; weight 3,590 pounds; standard tire size 7.50x14; gas tank 20 gals

PERFORMANCE:
0 to 30 mph, 4.0 seconds
0 to 50 mph, 7.8 seconds
0 to 60 mph, 10.4 seconds
0 to 80 mph, 17.6 seconds
Top speed, 100 mph., plus

SPEEDOMETER ERROR:
At 60 mph on speedometer, actual speed 60 mph



RED REFLECTOR on inside of doors warns oncoming driver if you open them at night.



FOUR STRIPES adorn each front fender. Sitting topside are two chrome "fish scalers."

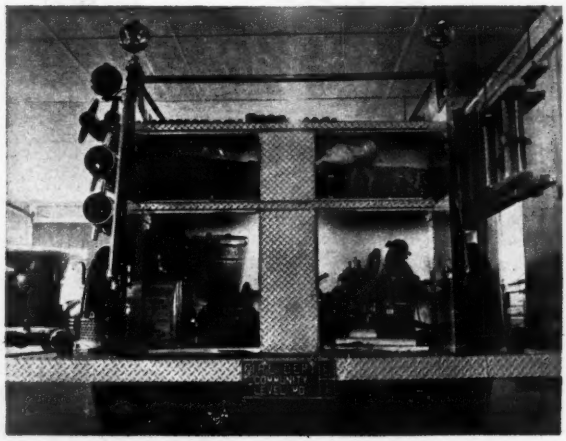
you could go almost as fast in second gear into a high wind as you could in top gear. A wide-ratio gearbox is just the opposite.

When you're traveling along on a turnpike and want to fast-pass a guy doing 55 mph, if your car has the close-ratio box you rev it up, drop it down into second and make your pass just as you would with standard Overdrive or the kickdown gear on an automatic shift. With the wide-ratio transmission this normally would be too much of a strain, as you'd be [*Continued on page* 178]

'58 CORVETTE'S looks make it "The finest American-type sports car I've seen," says Tom.

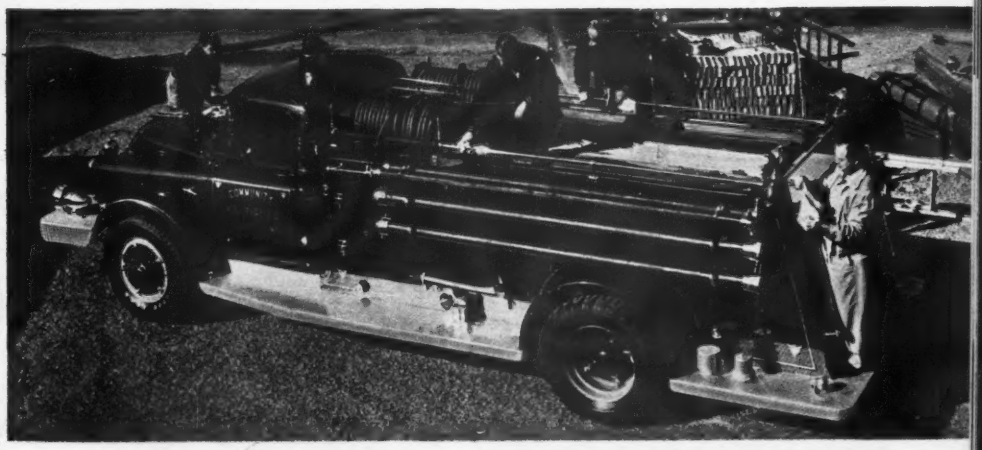
HOME-MADE FIRE DEPARTMENT

THE tiny hamlet of Level, Md., had no fire department in 1953. This was not surprising but when a house burned to the ground before engines from neighboring towns could get there, folks in Level decided they needed one. They bought, first, a 1919 LaFrance rig with a 150-gallon tank and a crack in the engine. They mended the crack and put the rig in the garage. Then they formed a regular volunteer company with by-laws and, more important, dues that paid for a newer engine. Next thing they needed was a firehouse, so one citizen donated the lot and nearly every able-bodied male in town supplied labor. A lady offered all the lumber they needed from her woodlot, a sawmill cut boards for nothing, and hardware was sold to the fire company at cost by local merchants. A doctor donated the pond where the engine takes on water, and the members of the company built a retaining wall so the truck could be drawn up to the brink in any weather. The final triumph of the Level Fire Company transcends all the others: a modern fire engine they built themselves from chassis up. •



NEW RIG was built on truck chassis by volunteers.

1919 LAFRANCE, Level's oldest rig, cost $1. Men built their own firehouse.



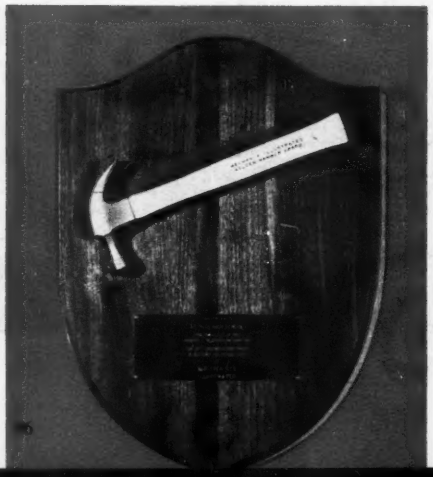
SHINING EQUIPMENT is Level's pride. Above, right, volunteers tidy up firehouse.

READY-TO-FLY Baby Ace. Students used plans from MI to build this nifty little ship.

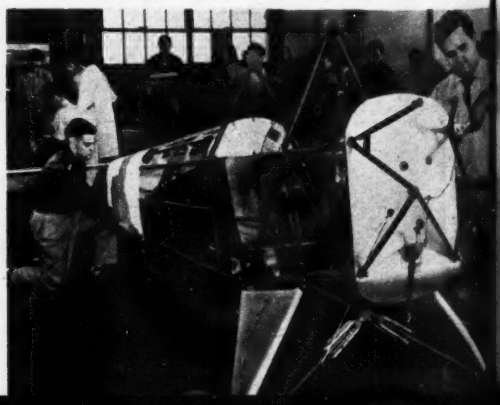
High School Students' BABY ACE

MI's build-it-yourself, single-seater light plane, featured in May-June-July issues of '55, is in the air once more. Students in the Aviation class of Robert Blacker, instructor at St. Rita High School, Chicago, Ill., built the Baby Ace as an aviation education project. According to instructor Blacker, "The Baby Ace was a huge success." •

GOLDEN HAMMER PLAQUE, especially made, was awarded to class for fine work.

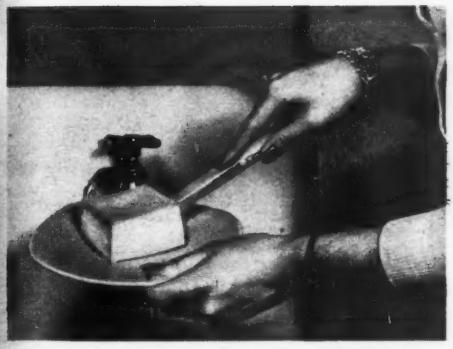


JIG for tail is being made above. Below, final assembly of fuselage takes place.



"MAGIC WAND"

MECHANIX ILLUSTRATED
BRIGHT IDEA AWARD



TO START Magic Wand after refilling tube you wet the sponge and then press it down several times at the base of the tube until the detergent saturates the sponge.

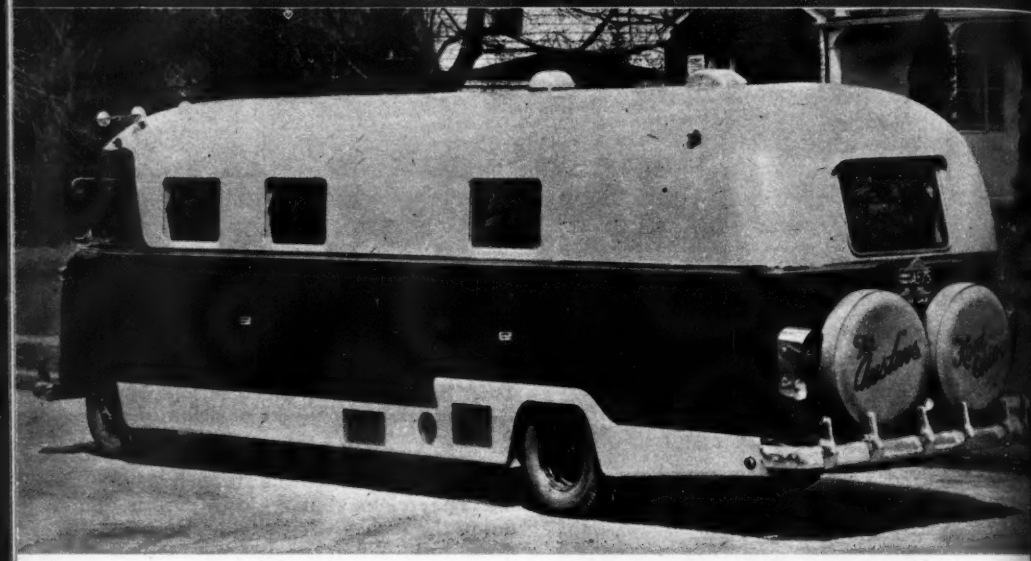
TUBE HANDLE feeds detergent to sponge. A tubeful does for weeks of dishwashing.

DISH mop users are a staunch group. They claim that the dish mop is to doing the dishes what skis are to going down hill. When the dish mop falls irretrievably behind the gas range they go on strike. Now there is a super dish mop called "Magic Wand" that brings new glory to the dish mop faction. Besides keeping your hands out of the water, this mop eliminates fiddling with detergent every time you wash up. You fill the mop handle with detergent every week or so instead, and as it uses only as much detergent as you need at any washing it saves you money. Extra sponges can be bought and are no trouble to install. This neat $1.00 item is sold by Leisure Industries, Dept. 68, 96-09 Metropolitan Ave., Forest Hills 75, N. Y. •

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

Cross-Country YACHT



TRAVELINER can carry up to six passengers with complete living-in facilities on road.

MI's Highway Cruise Car, the July Cover story suggesting a luxurious, coast-to-coast family vehicle for our super highways, brought in a flood of mail and the not too surprising fact that a similar vehicle already exists.

All the luxuries of home are provided in the imaginative Traveliner built by Dwight Austin of Kent, Ohio. These include sleeping accommodations for six, toilet and shower facilities, reclining chairs, kitchen and practically everything else you'd like to see in a home on wheels. Austin, the Traveliner's designer, and his wife have road-tested the cruise car over "9,000 miles in all kinds of weather." Result? "Extremely satisfactory." •

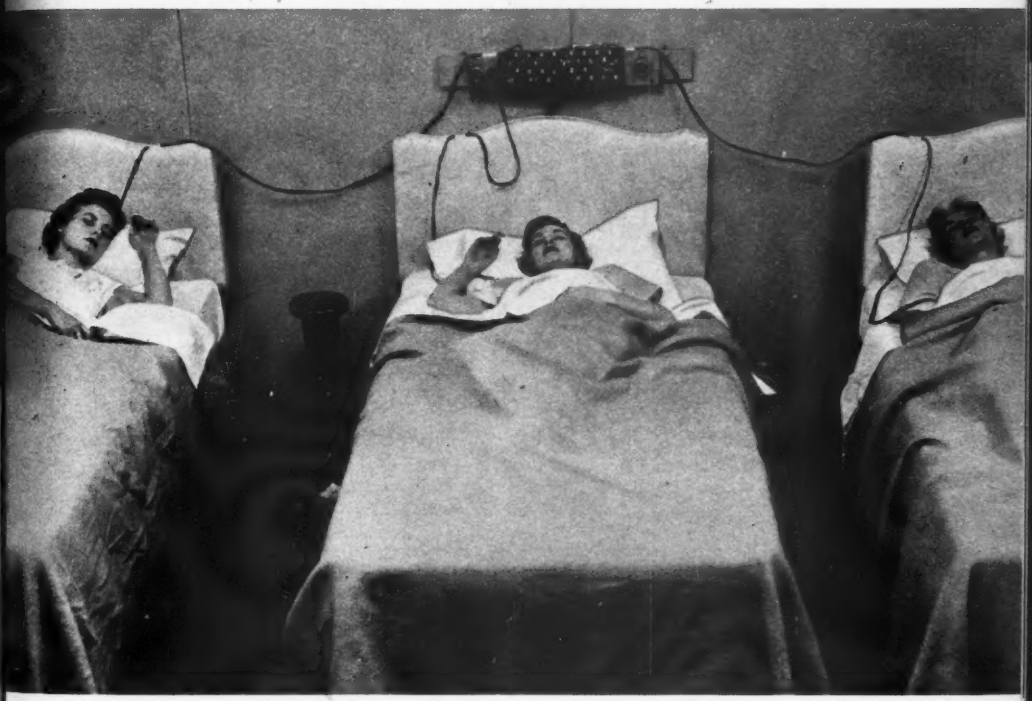
RAILROAD-TYPE cabin seats recline, can be raised, lowered, face rear for rest stops.

LOUNGE also has reclining seats. Traveliner has kitchen, shower, toilet facilities.

NEW EXPERIMENTS REVEAL

SECRETS of Sleep

DEEP SLEEPERS get $6 per night for tests at Sleep Research Foundation, Hoboken, N. J.

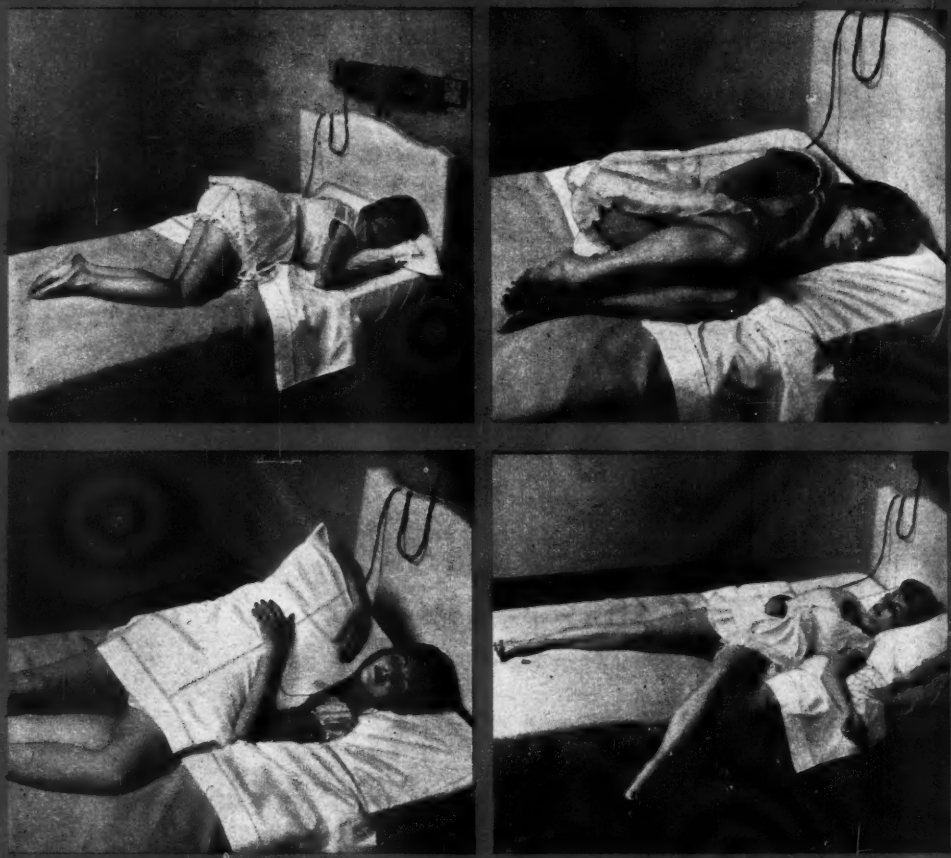


WAKE up there! We're going to talk about sleep.

"God bless the man who invented sleep," quoth Sancho Panza—though why he assumed a man invented it the deponent knoweth not. Women, too, spend a third of their lives sleeping (and the other two-thirds Plotting Mischief—but that's another story and one you're not likely to find in *this* magazine).

Everyone's become interested in sleep lately—for a lot of reasons.

ELECTRODES will record temperature, pulse and blood pressure of sleeper.



SLEEPING POSITION may reveal personality, according to some psychiatrists. Top left: stubbornness and negativity. Top right: deep insecurity and cowardice. Bottom left: loneliness and frustrations. Bottom right: psychologically well-organized, adjusted to life.

According to polls, 50 per cent of all Americans claim they *can't* sleep, or suffer from insomnia in some form. And scientists are beginning to look into sleep for possible clues to stress and the causes of heart trouble. And then a lot of guys are looking into sleep simply because they're tired and need a rest. What is sweeter than sleep?

A wide-awake outfit called the Sleep Research Foundation operates a sleep laboratory in Hoboken, N. J. and actually pays people to come and sleep in their dormitory-labs. Volunteers get $6 per night but must promise to sleep at the lab five nights a week for six weeks. (So long—see you in six weeks.)

These snoozing human guinea pigs get all kinds of electrodes and measuring devices taped to them to find out just what happens to the human organism when the snores begin to rumble. This is what researchers have found out so far:

Sleep comes in four stages: drowsiness, light sleep, deep sleep, and deepest possible sleep. Some people slip into the last stage within ten minutes. Others take hours. Sleep is a very personal thing.

True rest is a matter of quality, not quantity. Six hours of deep sleep are worth more than eight hours of light sleep.

The best sleep comes in the first three or four hours. After that you're just gradually coming awake again.

Apparently there is such a thing as "catching up on sleep," but it's done by snoozing a few extra hours each night over a long period.

To get a good night's sleep, reduce all outside stimuli to a minimum. Room temperature should be below body temperature. Light reading, light exercise or a light snack might hasten the arrival of old Morph. Even thinking about sleep might help. But don't count sheep. It'll only make your brain more alert and you might find yourself estimating their value in chops.

Sleep postures vary with personality and some psychiatrists say the way you sleep is a sure clue to your inner self. Move around a lot? Everyone moves but if you're a real sleep-wrestler, chances are you're emotionally upset. Sleep face downward? You're exhibiting stubbornness and negativity. Sleep standing up? You may be a horse.

Sleep is actually a rehabilitation process and keeps the old brain and body in decent repair. The amount of sleep needed varies with the individual. There have been cases where one or two hours a night were sufficient but most of us need six to ten hours of fairly deep slumber. In a recent Army test, five volunteers stayed awake for 98 hours. And what's worse, during the final hours they watched television. Boy, were they sleepy! They reported that after the first 72 hours they suffered hallucinations.

Prolonged sleep, chemically induced, is now being used successfully in the treatment of schizophrenia and other psychic ills. Patients sleep 20 to 22 hours a day for 60 days, being awakened only for meals.

Scientists know pretty well what happens to the human body during sleep; they are able to chart changes in brain activity during sleep; they can tell you with some degree of accuracy why you can't sleep. There's only one thing they don't know—what, exactly, is sleep? One theory is that it's a conditioned reflex. Another theory is that it's a surplus of lactic acid in the blood. Another man says it's deactivated nerve cells in the brain. Yet another says it's simply lack of oxygen in the brain.

Our own theory is that sleep, simply stated, isssszzzzzzzz. . .

—*Lawrence Sanders*

MAZE TEST is given to awakened sleeper, helps measure her hand-eye coordination.

BRAIN WAVES of several sleepers are recorded at once by electroencephalograph.

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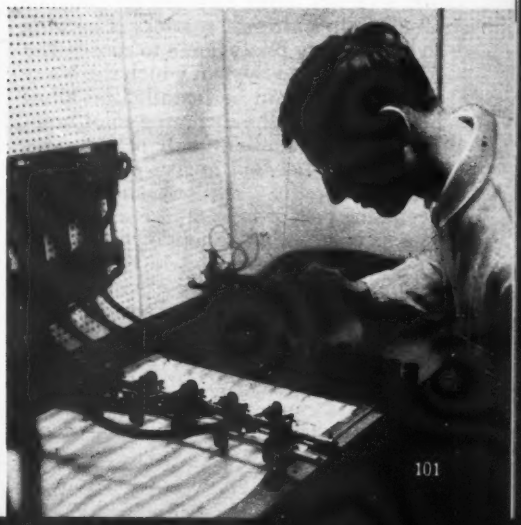
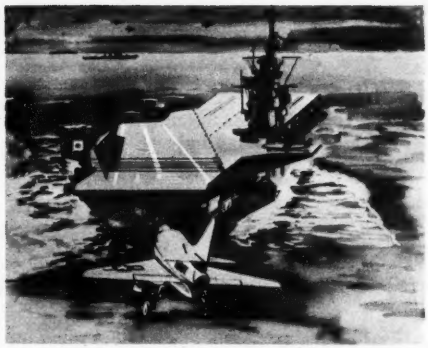


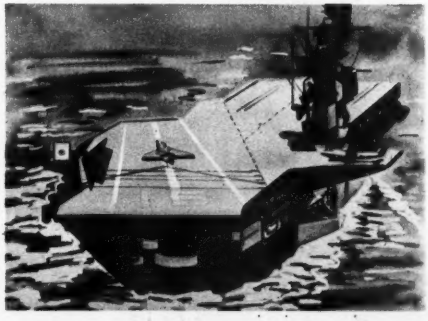
MEATBALL IN THE MIRROR

BRILLIANT meatball of light in bottom left corner of mirror guided reflected jet home.

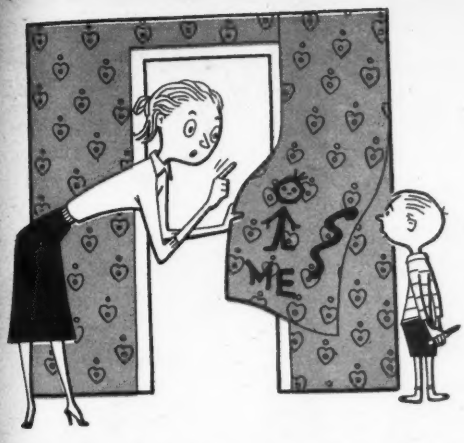
INCOMING pilots directed by ball of light in the mirror land via optical glide beam.

A "meatball of light" reflected from a large concave mirror aboard Uncle Sam's aircraft carriers is helping to bring Navy pilots home to roost. The Mirror Landing System which the Navy announced would be installed on all of its flattops, has the incoming pilot homing in on a brilliant ball of light reflected in a 4x4-foot mirror on the port side of the ship. As long as the pilot keeps the ball of light on the mirror, he is assured a perfect touchdown. Libbey-Owens Ford Glass Co. developed the system which is already credited with helping cut carrier landing accidents by one-third and saving taxpayers approximately $20,000,000 a year. •



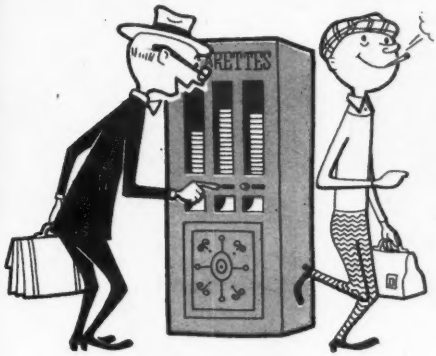


LIGHT BALL centered in mirror guarantees a perfect touchdown on the flight deck.



WALLPAPER bonded in layers so top sheet could be peeled off when soiled for fresh-room look. Dennis Griffin, Akron, Ohio.

TURPENTINE SOAP that would clean paint-stained hands quickly and easily for brush wielders. J. Williams, Warner Robins, Ga.



SLOT MACHINE CIGARETTES sold one at a time at two cents each—for light smokers. Stephen Dinsmore, South Middleboro, Mass.

INVENTIONS WANTED!

Is there a gadget you think should be invented? If so, send its description to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44 St., N.Y. 36, N.Y. Each one printed will be awarded $5.

LIGHTER FLUID CAN has screwdriver built onto cap for removal of screw from bottom of lighter. Billy Foster, Austin, Texas.

DOUBLE-HINGED car trunk to allow carting of large boxes in trouble-free manner in new low cars. Ken Lempke, Yakima, Wash.

MONEY MAKING IDEA

HE PROFITS FROM YOUR GOOD LUCK

DYER'S WATCH, samples.

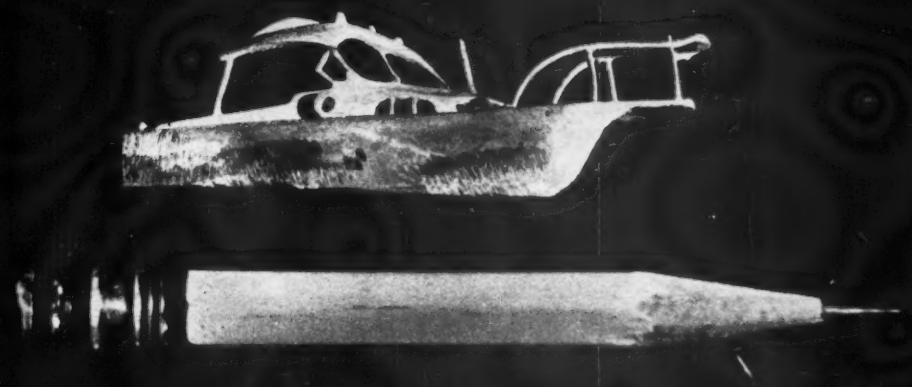
SAWBLADES—sharp tie bar

MICKEY ARNELL inspects lucky stone.

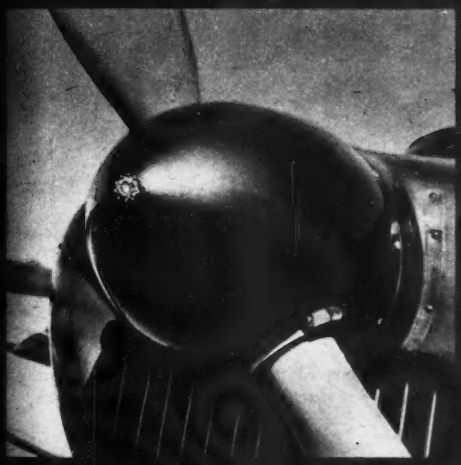
By George Daniels

BACK in the '30s Mickey Arnell of Brewster, N. Y., had a job in a jewelry factory, a small swing band and a funny little sideline—making custom jewelry for friends and friends of friends. Mickey made mostly good-luck charms—wacky things like the sterling silver 7's one guy wanted to put under the masts of his yacht.

It was those 7's that showed Arnell just how weird the lucky charm business could be. Shortly after the masts were stepped atop the 7's, the yacht was



FISHERMAN'S LUCK CHARM—a solid gold miniature of his Palm Beach-based cruiser.



JEWELLED SPINNER for a lucky pilot.

PIANO KEY that saved owner's life.

caught on Long Island Sound in the worst squall in memory. More than 100 boats were capsized—but the boat with the lucky charms sailed in safely. And then Arnell lost count of the orders for lucky 7's he received at $17 apiece.

That was the deal that got him a slew of customers among the yachting fraternity—a notoriously whimsical group. Recently Arnell got an order for a solid gold miniature of a man's fishing cruiser to clip on a shirt pocket. He filled the order for $200. Then the man sold the boat, bought another and ordered a new clip to go with the new boat. *(See photo.)*

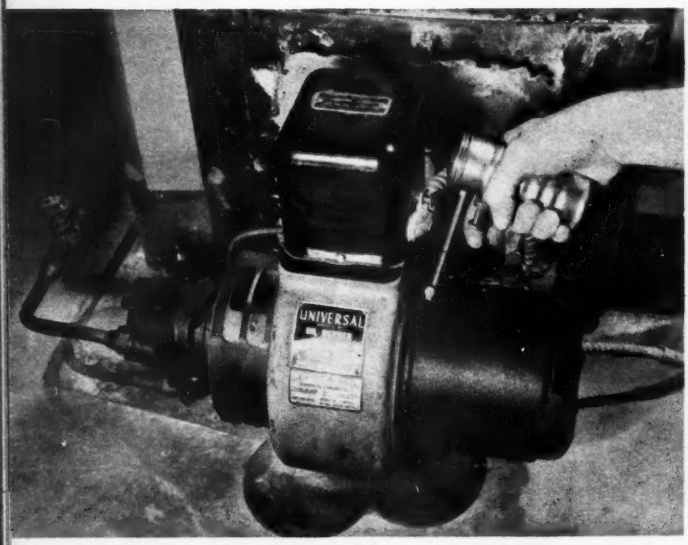
Well, sir, the lucky 7 episode convinced Arnell that he should open a lucky charm shop—so he rented a store with a jinx on it. People in Brewster knew that no business had lasted more than a month or two in those premises. But the first day Arnell opened the door a lady walked in with a lucky maple twig she wanted made into a brooch. She let him touch it for luck.

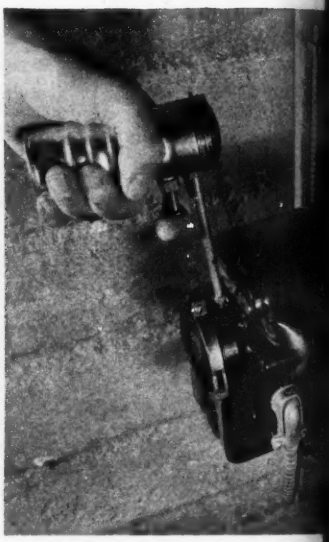
Apparently the charm was potent, because by nightfall no less than 1000 customers had [*Continued on page* 180]

SPECIAL SERVICE SECTION

YOUR HOME HEATING SYSTEM

By Lyman Gaylord



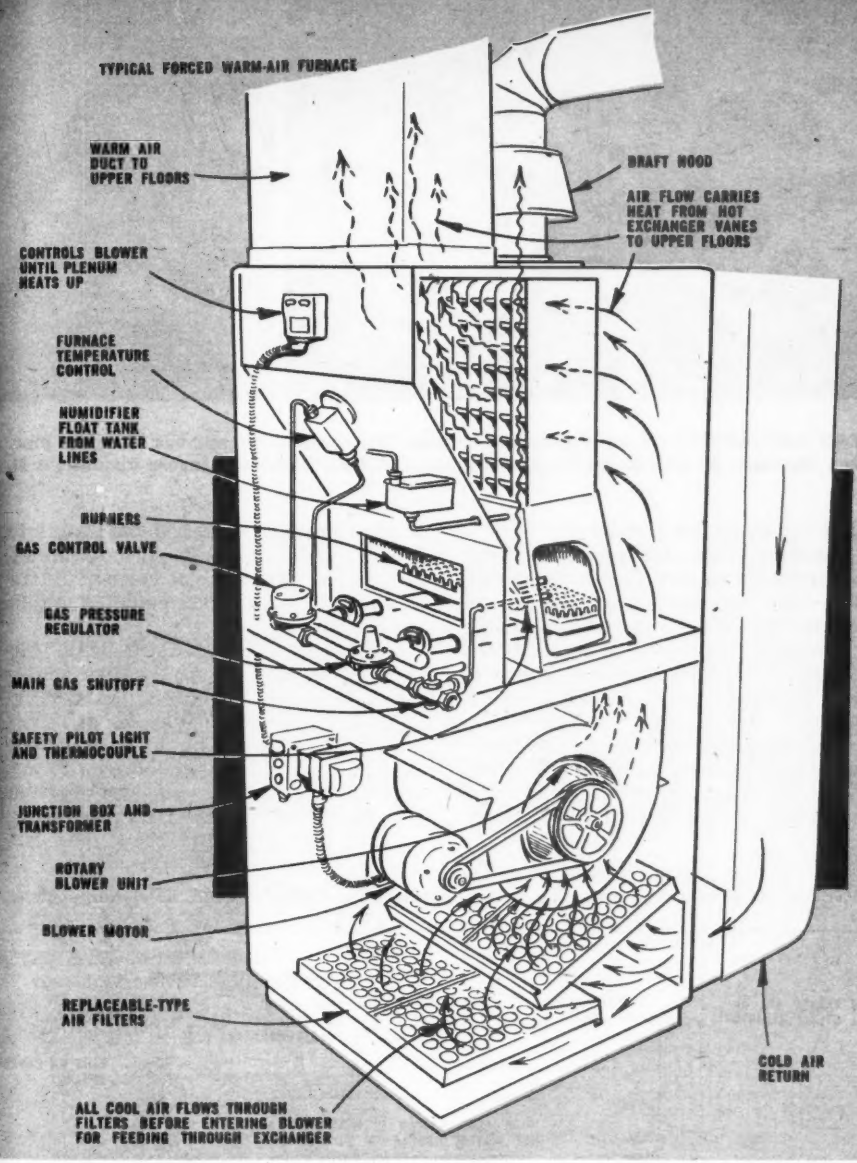


OIL-BURNER MOTORS require little servicing on the part of the owner. An occasional drop of oil at filler cups will keep them operating satisfactorily through the season.

TESTING DRAFT in a flue or smoke pipe can be done by exhaling cigarette at a distance of about two feet from the pipe opening. If smoke is drawn through pipe, then draft is good.

THE key to comfortable living during the winter months is to give your heating system the kind of pre-seasonal care it needs to stay at top performance levels during operation. A well-cared-for furnace or boiler, like a well-tuned automobile, is cheaper to operate and, of course, much safer than one that is neglected.

You needn't be a heating engineer or sheet metal expert to keep your heating plant in shape. From the check points on the following pages you should be able, with a few simple tools, to give your furnace or boiler a clean bill of health this winter. This check list was prepared with the cooperation of heating engineers and service experts of the Thatcher Furnace Co., one of the first U. S. builders of central heating sys-



COMPONENT PARTS of a typical forced warm-air furnace are illustrated in diagram above.

tems. Major repairs, of course, and adjustments of any critical controls should be left to your local heating equipment dealer.

All heating systems that *burn* anything to provide heat have certain parts in common and these should be your first check points. Electrically heated homes will be considered separately at the end of this article.

Check Points

The first check points in any system are chimney and smoke pipe. The smoke pipe carries smoke from boiler or furnace to chimney. Look for two

CLEAN AND SERVICE smoke pipes every autumn. Wire brush (left) removes soot from pipe. Check condition and fit of the damper (center). Caulking (right) will insure an airtight fit.

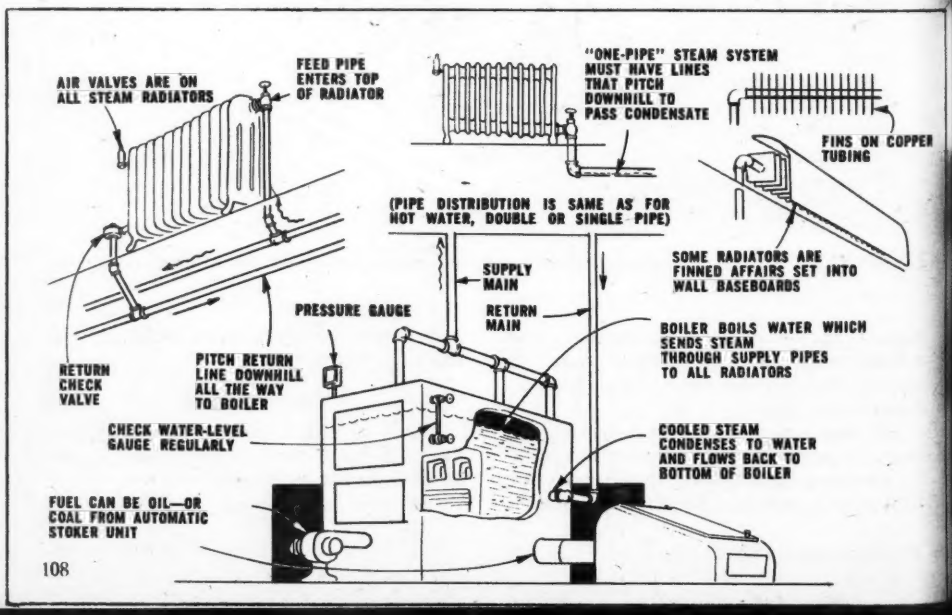
things: obstructions and leaks.

Inspection of the smoke pipe requires its removal from between furnace—or boiler—and chimney. Look for places that have rusted through and repair any such holes with furnace cement. While you have it off, give the smoke pipe a good cleaning with a stiff-bristled brush.

Checking the chimney for obstructions is only slightly more complicated. A small shaving mirror will be helpful for this job. Insert the mirror through the smoke pipe hole, reflector up, into the base of the chimney. If the chimney is clear of obstructions you should be able to see a generous patch of sky in the mirror.

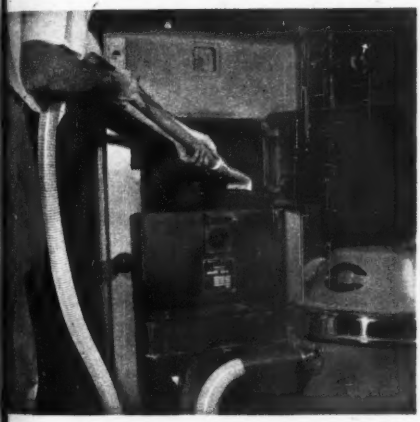
Chimneys with crooks or bends can be checked by sending a helper up on the roof to lower a weighted trouble light down the chimney as far as it will go. You should be able to see this light in your mirror. It's a good idea to put a protective cover of some sort over the mouth of the chimney to discourage

DIAGRAM illustrates the operative fundamentals of a typical forced hot-water system.



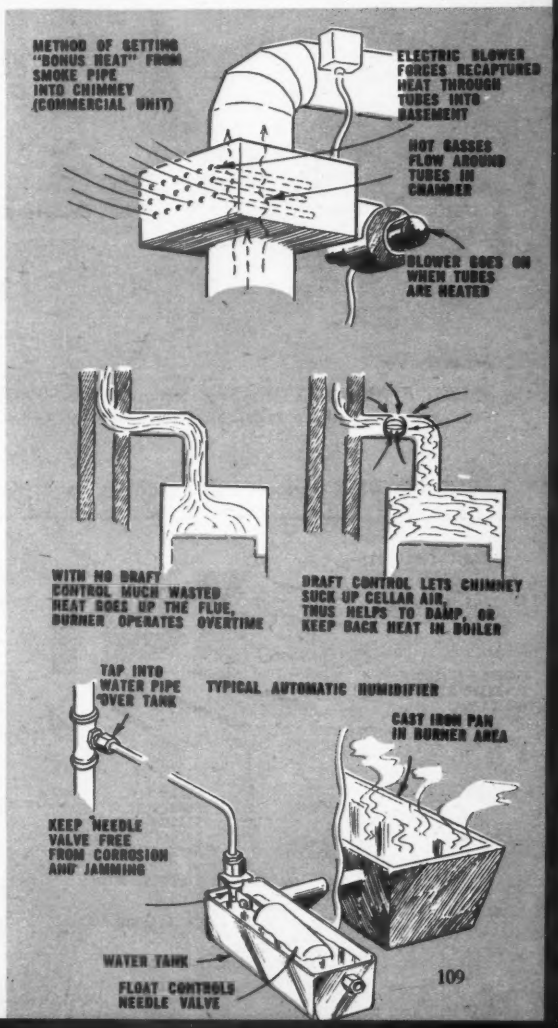
CLEANOUT BOX at base of chimney permits access to accumulations of soot and grime.

CHECK SOOT on furnace flues with screwdriver. Deposits should not exceed 1/16 inch.



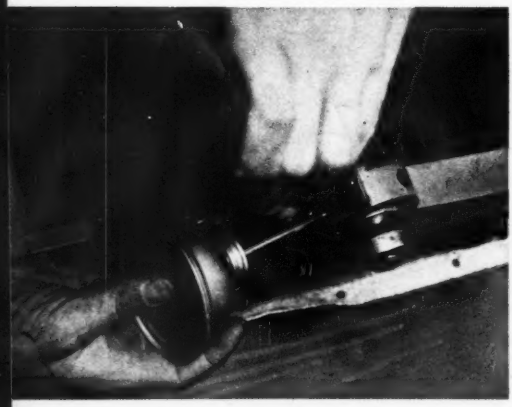
AFTER WIRE BRUSHING flues, pick up all loose soot with commercial vacuum.

FAULTY INSULATION around nozzle of oil burner will retard unit's efficiency.

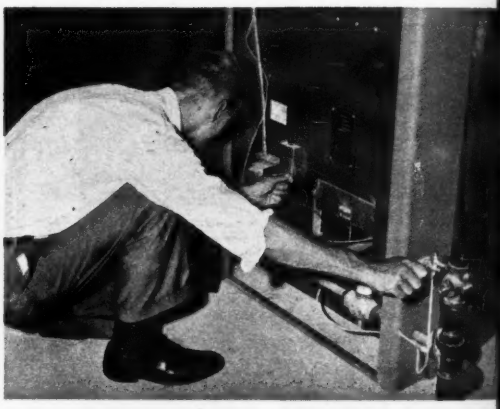


FURNACE CEMENT is applied with putty knife to any leaks or holes in smoke pipe.

AIR FILTERS are base of most owner complaints; clean or replace them regularly.



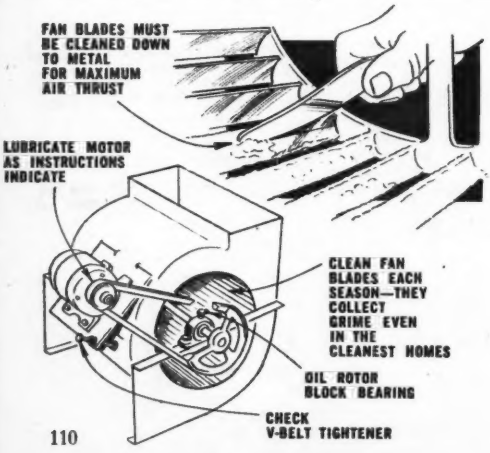
MOTOR AND BEARINGS of forced warm-air units should be lubricated periodically.

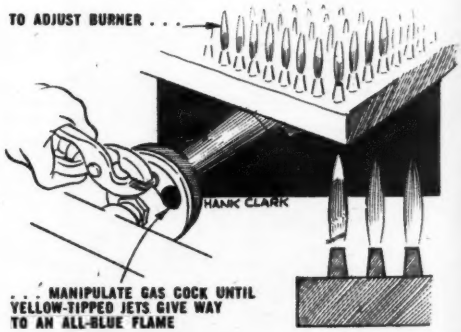


CHECK automatic monitor controlling pilot valve on your gas furnace before firing up.

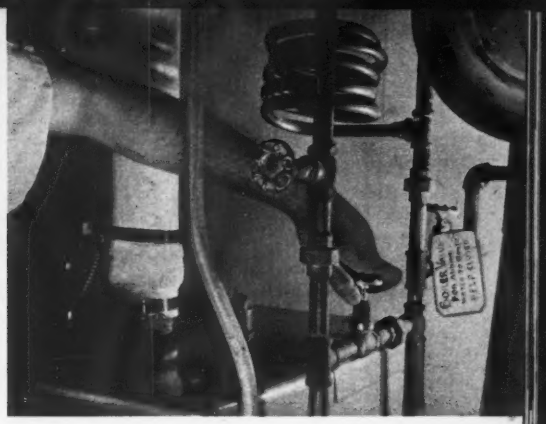
BLOWER UNIT on forced warm-air system.

GAS BURNER is easily adjusted as shown.





SMALL WINDOW should be left open to provide "combustion air" for all type units.



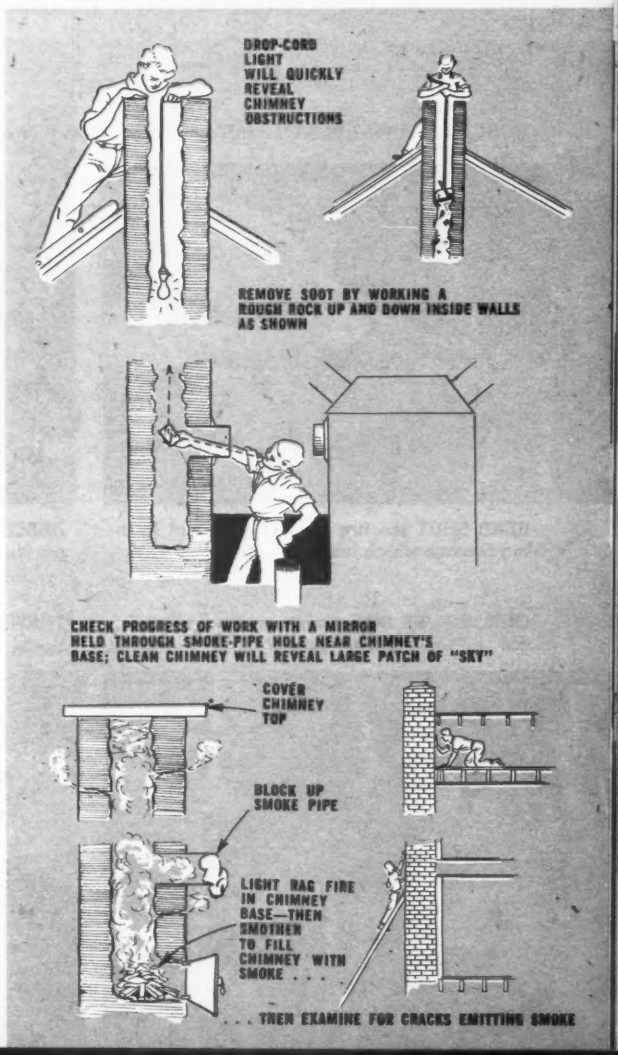
MIXING VALVE spans hot- and cold-water lines and regulates heat of all tap water.

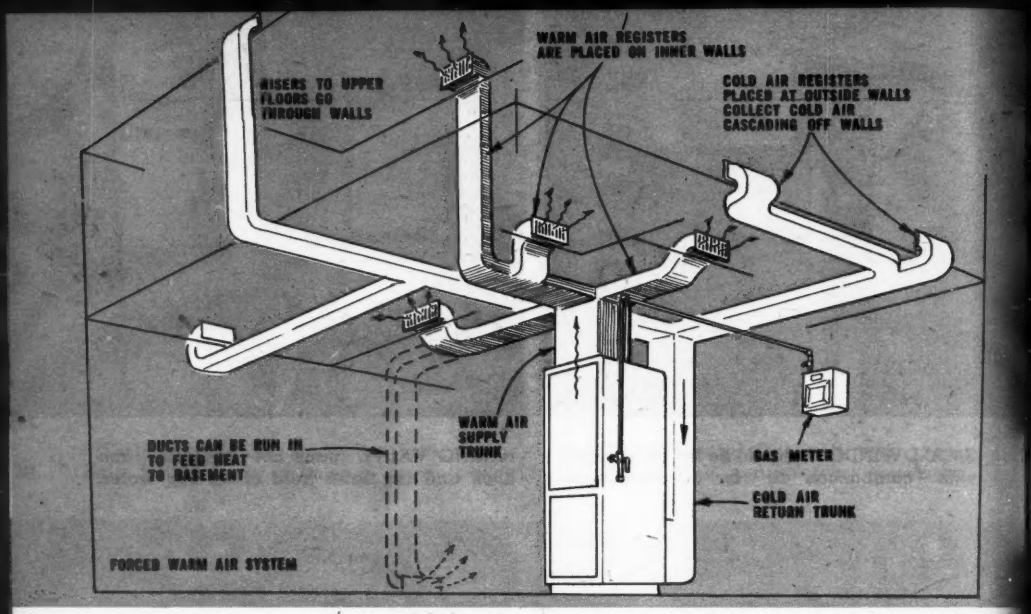
nesting birds and to keep out autumn leaves and other debris.

A chimney with an excessive accumulation of soot on its sides can be cleaned by tying a gunny sack around a brick and lowering it on a rope from the roof. Scrape the weighted burlap against the sides to loosen the soot deposit. Make sure when doing this that *all* dampers and clean-out doors are closed. Later the soot which has fallen to the bottom should be removed with a commercial vacuum cleaner.

With the smoke pipe removed, build a small fire in the base of the chimney to check for smoke leaks. If your furnace has a clean-out door, this fire can be built in the ash pit.

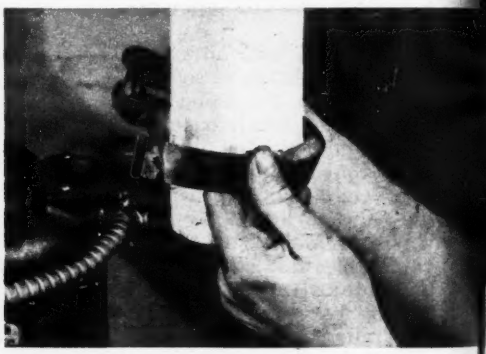
Once a goodly blaze is going, cover the fire with leaves, wet lawn clippings or wet rags—anything that will produce plenty of smoke. Have your helper cover the top of the chimney with some non-flammable material. Now check any rooms through which the chimney





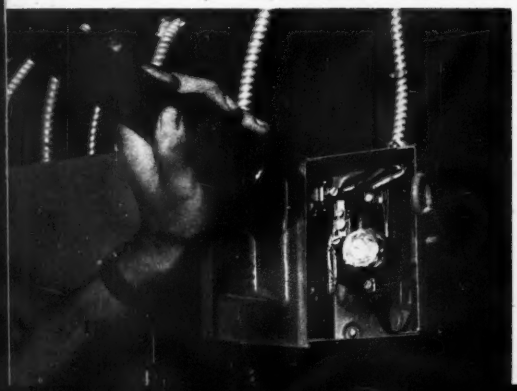
FORCED WARM-AIR SYSTEMS react quickly to thermostats, heat all rooms simultaneously.

SEAL SHUT the fire door of any coal burning furnace which has been converted to gas.

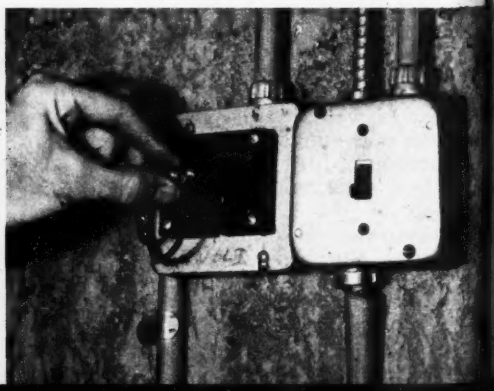


ASBESTOS PIPE INSULATION should be put on exposed hot-water and steam pipes.

CHECK FUSE BOX first in case of mechanical failure of all except coal furnaces.

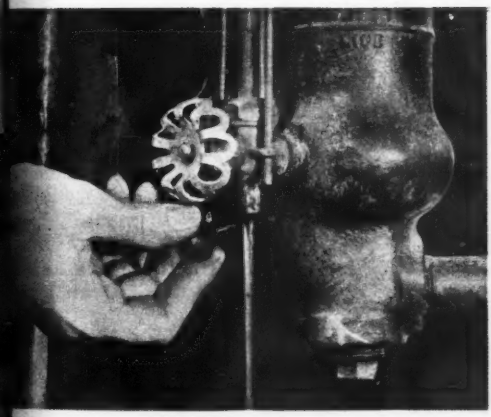


TRANSFORMER operates gas-heat units; check terminal connections before firing up.



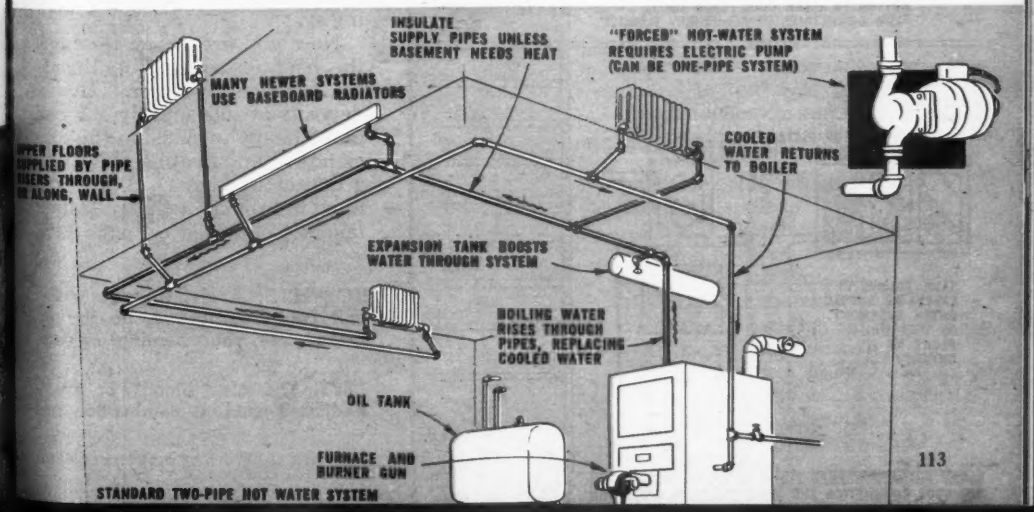
ASH PITS of coal-burning furnaces must be kept clean to provide sufficient draft.

INSPECT the condition of furnace grates by rotating them slowly with grate wrench.

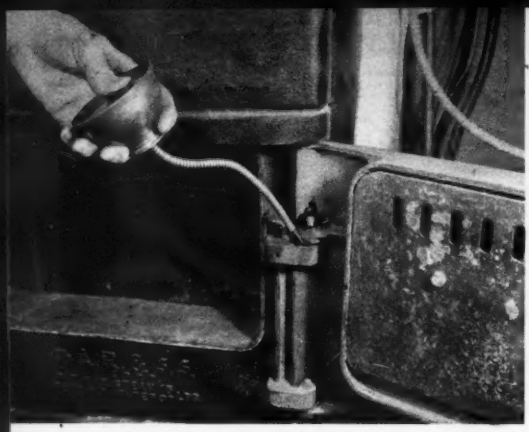


ALTITUDE GAUGE must be kept unclogged. With pet cock removed, water should drain.

HUMIDIFIER installation on this furnace will keep air moist throughout the season.

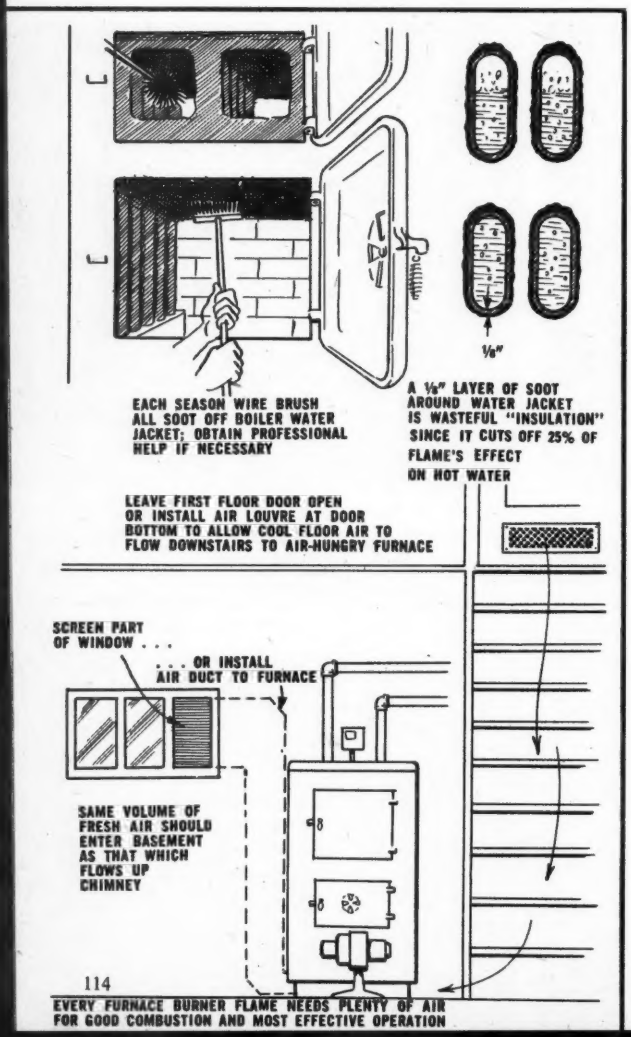


STANDARD TWO-PIPE HOT WATER SYSTEM



FURNACE DOOR will open easily and quietly with a few drops of oil on the hinge.

RUSTY, sediment-laden water from boiler indicates need for a thorough cleaning.



EVERY FURNACE BURNER FLAME NEEDS PLENTY OF AIR FOR GOOD COMBUSTION AND MOST EFFECTIVE OPERATION

rises, not forgetting the attic. If there are any serious leaks, you will soon be able to spot the smoke. These can usually be repaired with regular cement. If your chimney leaks but you are unable to locate the trouble, call your serviceman and he will trace it down with special detecting equipment.

There are two important reasons for making these checks:

First, chimney leaks can be dangerous; many heating fuels —particularly hard coal—form poisonous carbon monoxide as they burn.

Secondly, a leaky chimney curtails the effectiveness of the draft. In short, chimney obstructions can seriously affect the efficiency of an entire heating system.

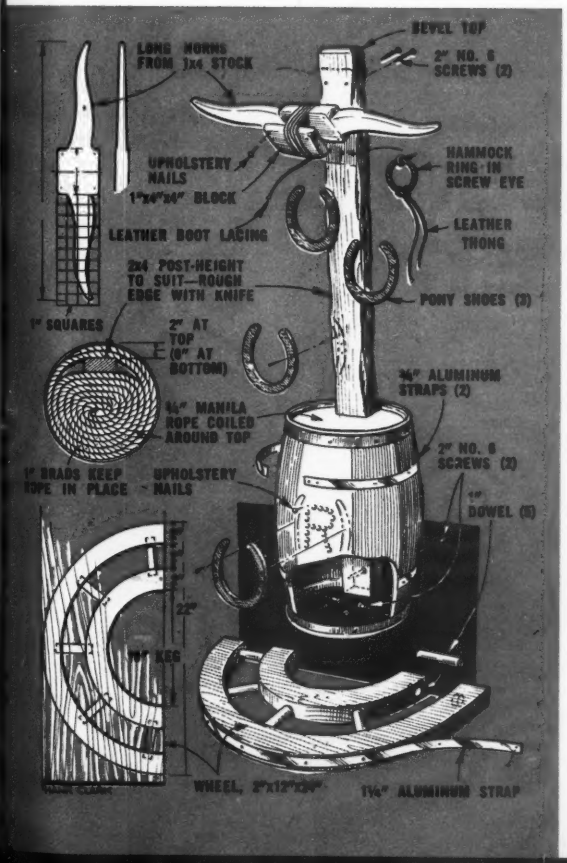
Now you are ready to check the heat-absorbing flues inside the furnace or boiler. Heavy deposits of soot and fly ash can make heavy inroads on the efficiency of any heating plant. As a matter of fact, U. S. government figures show that a 1/8-inch layer [*Continued on page* 148]

TOP LEFT. A clean water jacket will contribute greatly to the efficiency of your heating system.

LEFT. The life "blood" of every heating system is combustion air.

Make It as a gift

WESTERN CLOTHES RACK



SHADES of the Old Wild West! Here's a clothes rack any buckaroo would be proud to hang his chaps on.

Cut the half-wheel shoe rack from a piece of old 2x12-inch stock, spoke it in with some one-inch dowels and attach a strip of aluminum for the wheel rim.

Now coil and nail some ¾-inch manila rope on top of the nail keg for a shelf.

Use upholsterer's tacks to shape the owner's brand inside a pony shoe on the side of the keg. Three more pony shoes serve as hooks when nailed to that length of 2x4 that attaches to and extends up out of the keg.

That center ring is just a hammock ring with a piece of thonging tied to it for fun.

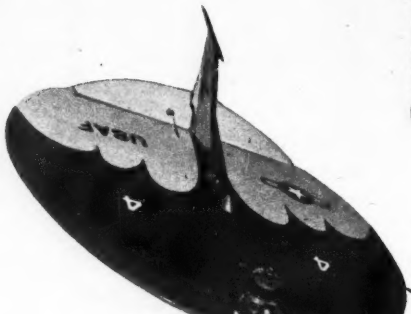
Those "longhorns" were cut on a band saw from some scrap 1x4-inch lumber.

Burnish the rack with a blowtorch before coating with clear spar varnish.

This rack cost $1.36, Pardner, but maybe you can make it for less!—*L. Rothman*

A FATHER AND SON PROJECT

BUDDING MODELERS will soon learn fundamentals with a little coaching.



MI's SATELLITE SAUCER

STUNT and combat flying of model planes has enjoyed a real upsurge of popularity in recent years. This growing interest has tended to focus attention on many new model designs that lend themselves admirably to a variety of exciting maneuvers. One of the most radical (and ideal) configurations in the stunt-and-combat field is the circular wing—commonly referred to as a flying saucer.

The dynamics of this design are such that the entire surface of the model contributes to its lift. As a result, the plane can be compactly made and still incorporate a generous lifting surface.

Excellent performance can be obtained with engines of .075 to .099 cubic inch displacement. A model of conventional configuration would

START ENGINE with a 1½-volt battery—one lead to glow plug and one to ground.

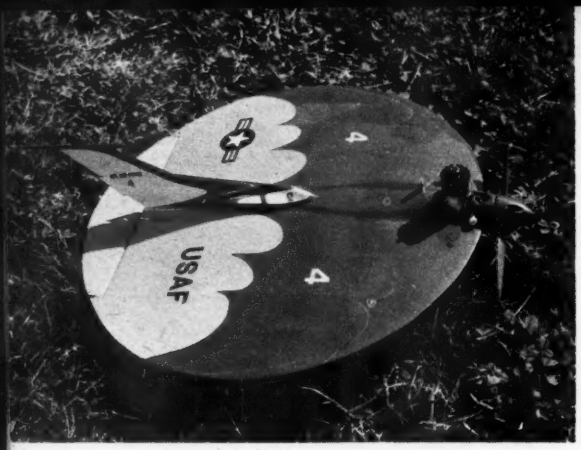
NOSE-ON VIEW and shadow of saucer show pure simplicity of circular configuration.

require a 35-inch wing-span with about a six-inch chord to achieve effective lift comparable to this saucer of slightly less than 15 inches in diameter. Also, the weight—as well as the building time—of a saucer is often less than half that of its conventional counterpart. Finally, because of its compactness and its lack of fuselage and tail surfaces, the saucer will withstand greater abuse.

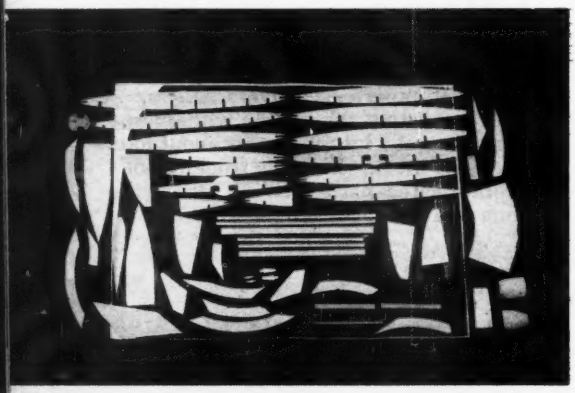
A newcomer to the sport of control-line flying may tend to shy away from such a model. However, once attempted, he will find that we have really understated the advantages to be derived from saucer configurations.

Test flying such a model always presents thrills and excitements for both spectators and flyer as it is fast, quick to respond to controls, and has ample power to fly through the most intricate maneuvers. In brief, it is the model with which the average stunt or combat flyer can compete for top honors with the most experienced flyers.

Constructing the saucer without the assistance of a kit represents about four evenings' work. Building from the kit's prefabricated parts will cut down the time to a little more than two evenings.

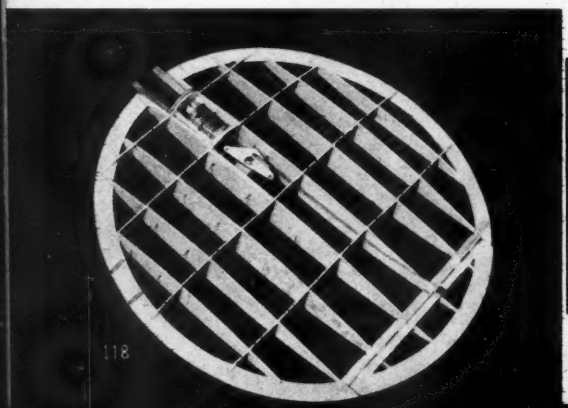


COLOR trim is up to you. This model was realistically trimmed in Air Force hues.



KIT includes precut pieces that are assembled, covered and finished by builder.

PLANKING is next step after cowling, ribs, spars and the control line are assembled.



Assuming all the parts are to be hand shaped, begin by cutting all ribs and spars to size. They are designed to interlock and, if properly cut, will align correctly.

The circumference of the circle includes the leading edge, wingtips, and elevator trailing edge; these are cut next. Now cut the remaining pieces that go to make up the elevator and wing trailing edge. Then assemble the elevator and cement the circumference in place as shown.

Cut out the plywood firewall to shape and bend the wire landing gear strut as shown. Bolt the strut to the firewall or bind in place with some soft copper wire. Then install the completed unit in position and cut the engine mounts to size and cement them in position.

Now, before proceeding any further, install the complete control-line assembly and add ballast to the outer wingtip as indicated. The elevator control horn can be a standard type such as sold by hobby shops or can be formed from a bent lug of similar size.

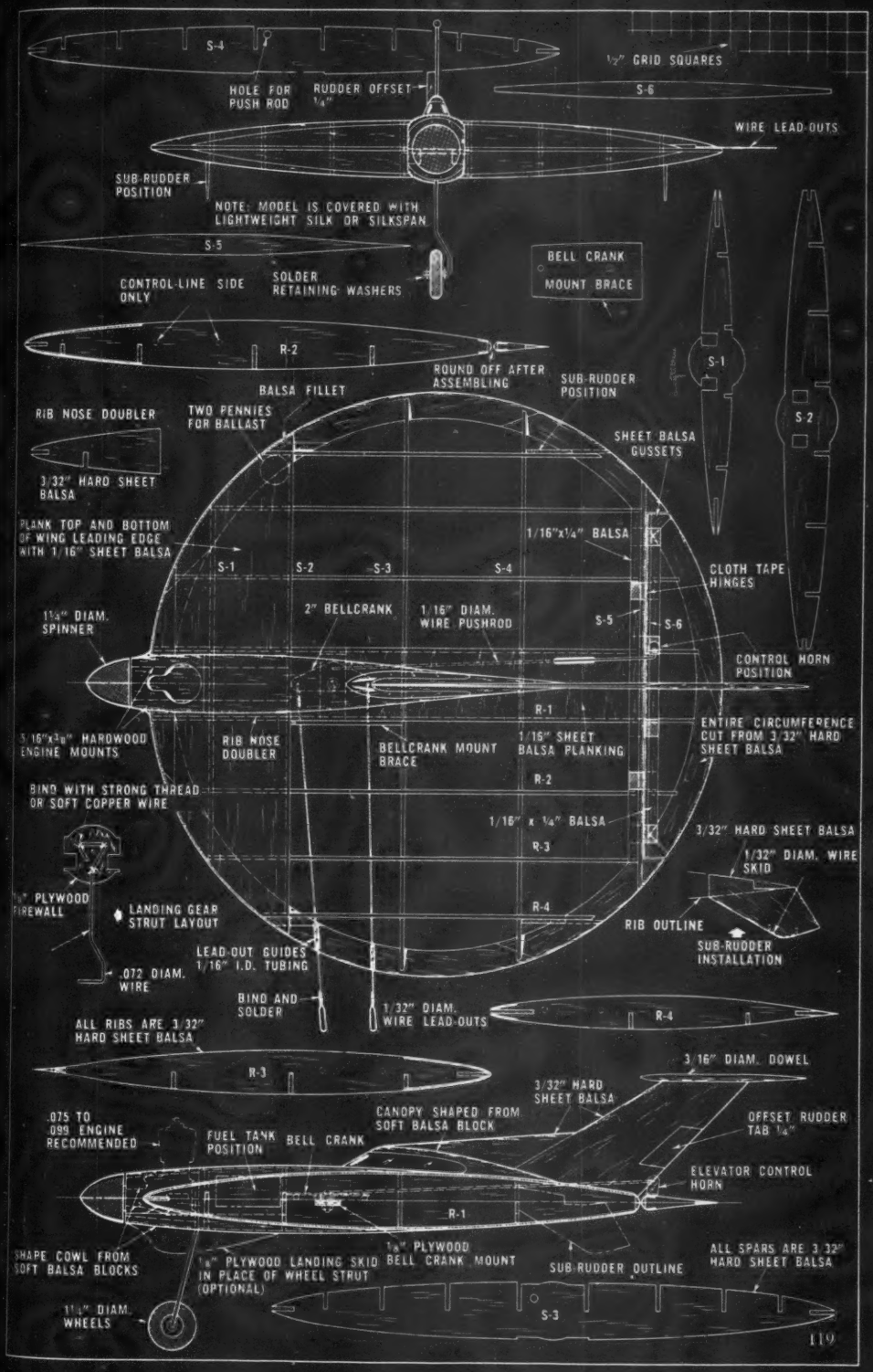
Begin planking the model at the center by covering the fuselage up to the point where it blends in with the wing; then complete planking the entire forward portion of the wing as well as the saucer's center section.

Decide at this point on the engine to be used and shape the engine cowl accordingly. Hold off permanent installation of the engine until the cowl has been completely finished.

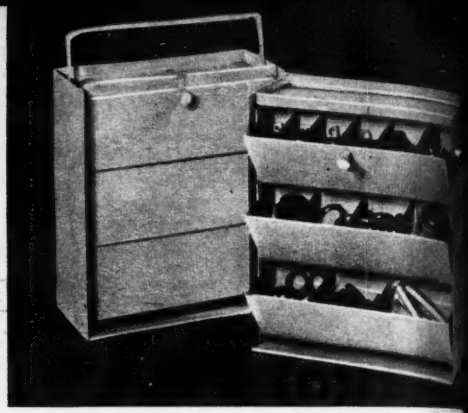
During construction it is advisable to cover the exhaust and intake areas of the engine to prevent dirt and dust from getting inside. Since these tiny engines have a tendency to [*Continued on page* 155]

KIT AVAILABLE

A kit and large plan for constructing MI's Satellite Saucer is available to MI readers. To get your kit, which is complete except for engine and propeller, send $3 to the C. A. Zaic Co., Inc., 883 Lexington Ave., Brooklyn 21, N. Y.


S-4
HOLE FOR PUSH ROD
RUDDER OFFSET 1/4"
1/2" GRID SQUARES
S-6
WIRE LEAD-OUTS
SUB-RUDDER POSITION
NOTE: MODEL IS COVERED WITH LIGHTWEIGHT SILK OR SILKSPAN
S-5
BELL CRANK MOUNT BRACE
CONTROL-LINE SIDE ONLY
SOLDER RETAINING WASHERS
R-2
ROUND OFF AFTER ASSEMBLING
SUB-RUDDER POSITION
S-1
S-2
BALSA FILLET
RIB NOSE DOUBLER
TWO PENNIES FOR BALLAST
SHEET BALSA GUSSETS
3/32" HARD SHEET BALSA
PLANK TOP AND BOTTOM OF WING LEADING EDGE WITH 1/16" SHEET BALSA
1/16"x1/4" BALSA
S-1
S-2
S-3
S-4
CLOTH TAPE HINGES
1 1/4" DIAM. SPINNER
2" BELLCRANK
1/16" DIAM. WIRE PUSHROD
S-5
S-6
CONTROL HORN POSITION
R-1
5/16"x3/8" HARDWOOD ENGINE MOUNTS
RIB NOSE DOUBLER
BELLCRANK MOUNT BRACE
1/16" SHEET BALSA PLANKING
ENTIRE CIRCUMFERENCE CUT FROM 3/32" HARD SHEET BALSA
BIND WITH STRONG THREAD OR SOFT COPPER WIRE
R-2
1/16" x 1/4" BALSA
R-3
3/32" HARD SHEET BALSA
1/32" DIAM. WIRE SKID
1/8" PLYWOOD FIREWALL
LANDING GEAR STRUT LAYOUT
R-4
RIB OUTLINE
SUB-RUDDER INSTALLATION
LEAD-OUT GUIDES 1/16" I.D. TUBING
.072 DIAM. WIRE
BIND AND SOLDER
1/32" DIAM. WIRE LEAD-OUTS
R-4
ALL RIBS ARE 3/32" HARD SHEET BALSA
R-3
3/16" DIAM. DOWEL
3/32" HARD SHEET BALSA
.075 TO .099 ENGINE RECOMMENDED
CANOPY SHAPED FROM SOFT BALSA BLOCK
OFFSET RUDDER TAB 1/4"
FUEL TANK POSITION
BELL CRANK
ELEVATOR CONTROL HORN
R-1
SHAPE COWL FROM SOFT BALSA BLOCKS
1/8" PLYWOOD LANDING SKID IN PLACE OF WHEEL STRUT (OPTIONAL)
1/8" PLYWOOD BELL CRANK MOUNT
SUB-RUDDER OUTLINE
ALL SPARS ARE 3/32" HARD SHEET BALSA
1 1/4" DIAM. WHEELS
S-3

ELECTRIC SHAVER plugs into automobile cigarette lighter or 110-volt home outlet.
Remington Rand, Bridgeport, Conn.

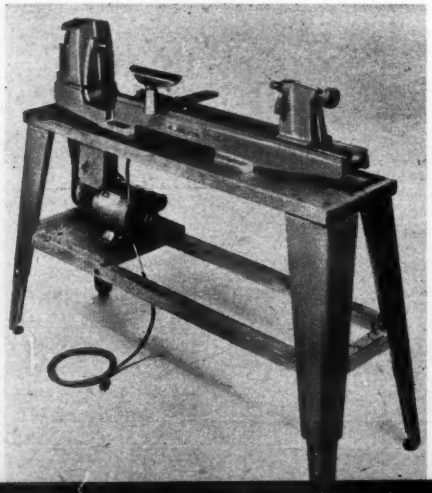


STEEL CABINET for storing small parts has "louver-type" trays for easy access.
Arcline Co., 1415 W. Shakespeare Ave., Chicago

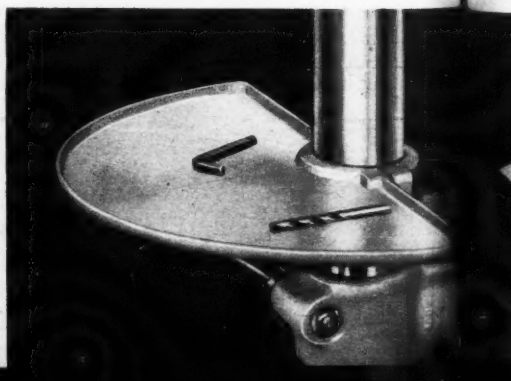
GIFTS FOR *Craftsmen*

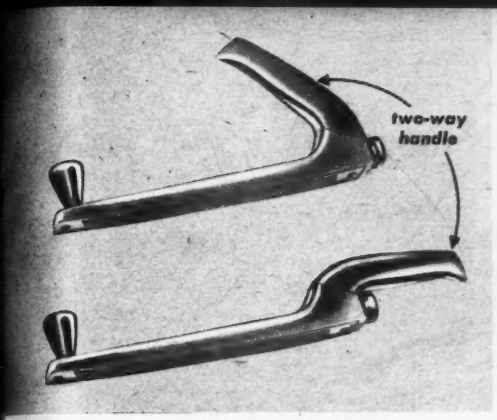
NEW 30-INCH LATHE has built-in grinding wheel; nine-inch swing, twelve over gap.
Magna Power Tool Corp., Menlo Park, Calif.

CHARGER AND BATTERY WARMER can be used on either a 6- or a 12-volt system.
Barfield & Co., 6552 N. Glenwood Ave., Chicago 26



DRILL PRESS TRAY clamps on the column, is handy for holding bits, wrenches, etc.
South Bend Lathe Works, South Bend, Ind.

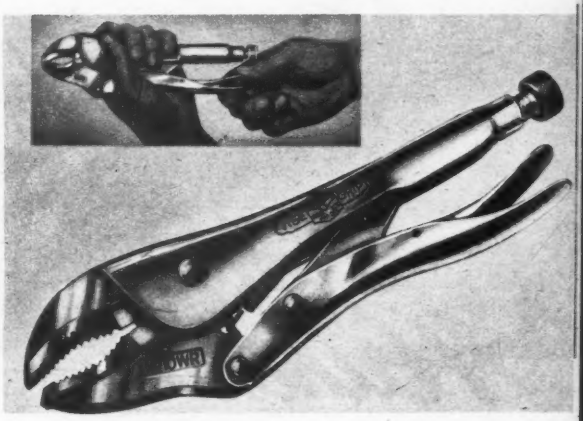




PLANE-'R-FILE combination tool shapes anything from soft woods to tough steel.
Millers Falls Co., Greenfield, Mass.

PORTABLE ELECTRIC hand saw will cross-cut, rip, serve as jig saw and hack saw.
Porter Cable Machine Co., Syracuse, N. Y.

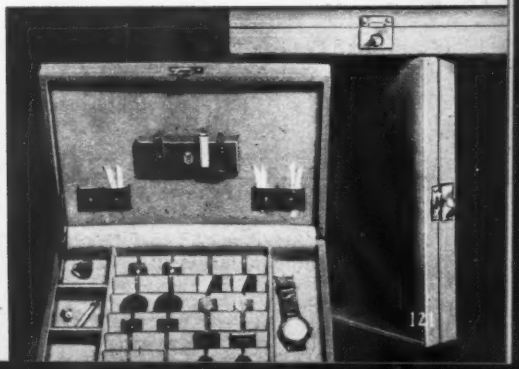
FIX-UP SET is packed with tools that a handyman can use for odd jobs around home.
The Stanley Works, 111 Elm St., New Britain, Conn.



VISE-GRIP WRENCH locks onto work with a squeeze, has a finger-pressure release.
Petersen Mfg. Co., Inc., DeWitt, Nebraska

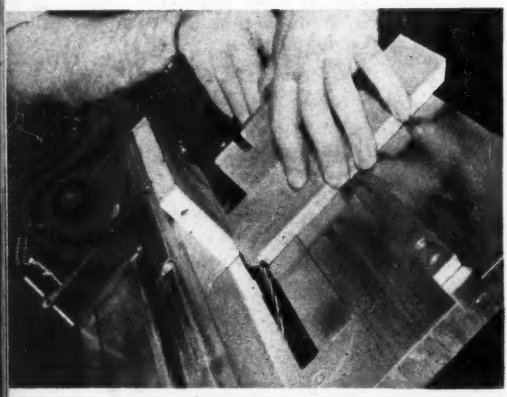
BOOK BAR is sold in real or simulated leather, holds a pint flask, two glasses.
Stationers Specialty Corp., 19 W. 21st St., N. Y. 10

MAN'S JEWEL CASE has a compartment for everything from his tie bar to his watch.
Mele, 386 Fifth Ave., N. Y.



Make It AS A Gift

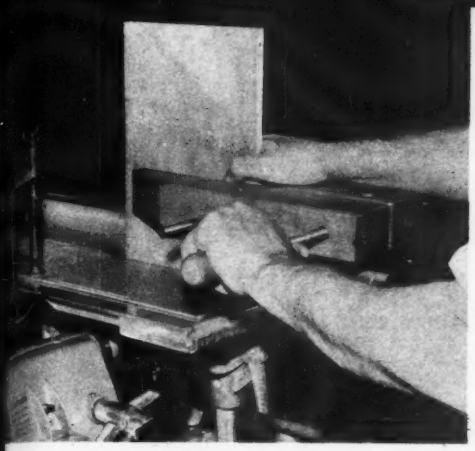
Cigar Humidor



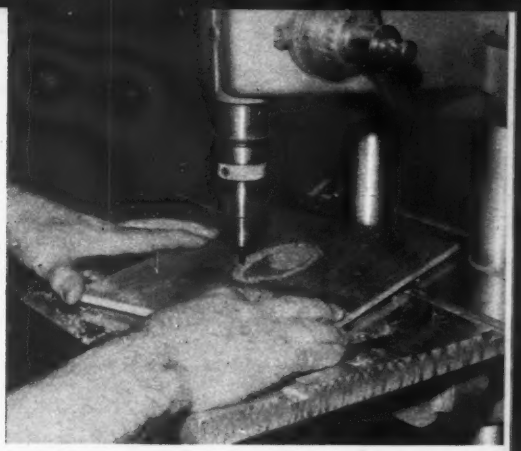
SIDES are mitered at 45° and ⅛-inch cuts are made through the centers for splines.

THERE is no gift that will please a cigar smoker more than a well-constructed humidor. This one has been designed to hold an adequate supply of cigars which may be stored loose or left in their original box. It is lined with tropical cedar on the sides and has a frosted glass top and bottom. The lid is provided with a removable moistening device that makes it possible for the moisture content of the cigars to be controlled at whatever amount is found to be most desirable for the individual smoker.

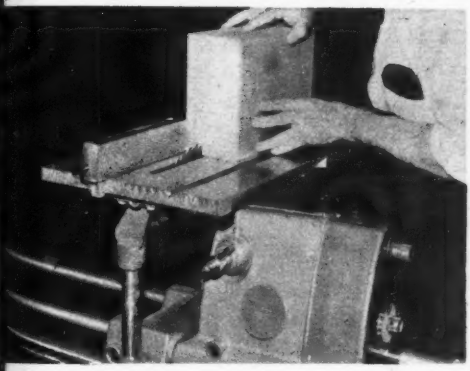
Instructions are given for a humidor with an inlay recessed in center of the cover, but any other desired method of decorating or finishing may be employed. An inlay border can be used or the box [*Continued on page* 155]



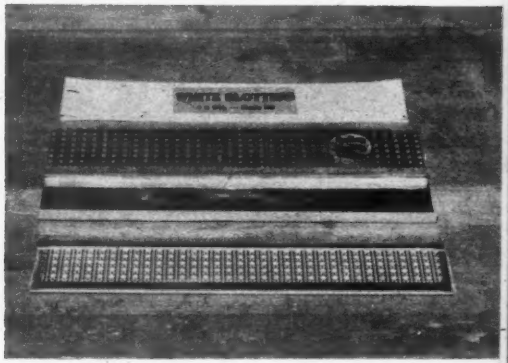
RABBET is cut in top after clamping the piece in a hand screw to offset any warp.



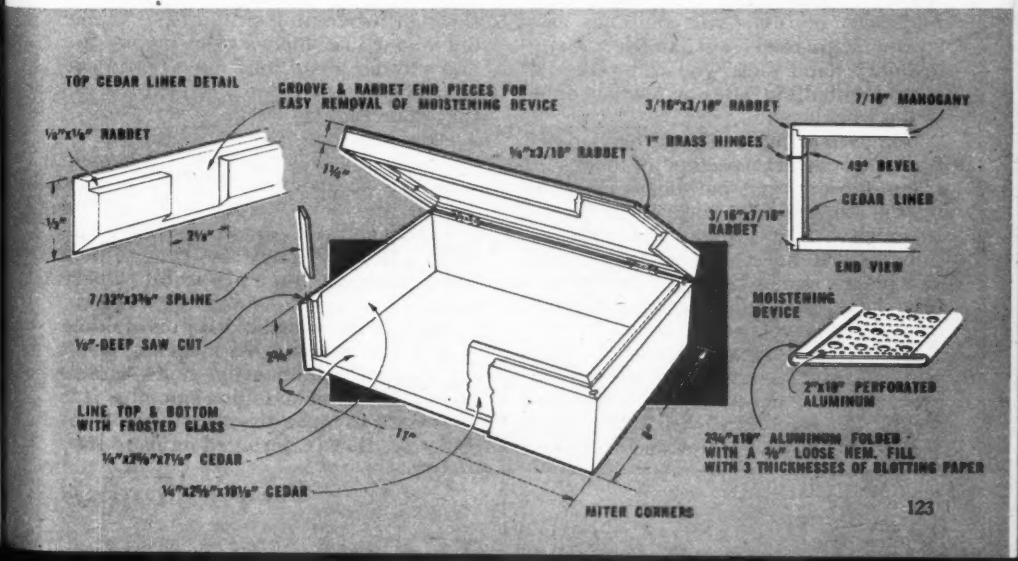
COVER is routed to take ready-made inlay purchased from a craft supply house.



BOX is made as a complete, sealed unit, then cover (1¼ inches deep) is sawed off.



MOISTENING DEVICE is made from sheet and perforated aluminum and some blotters.



Roll-Away Train Table

Clear the tracks! Streamlining that old folding bed into a railroad bed is easy— and your junior Casey Jones will love it.

By Charles Steiglitz

HERE'S a model train platform you can carry from basement to attic without dismantling your track. Its fold-away construction combines easy storing with ready availability. Using ordinary hand tools, you can expect to start highballing after a few evenings at the workbench.

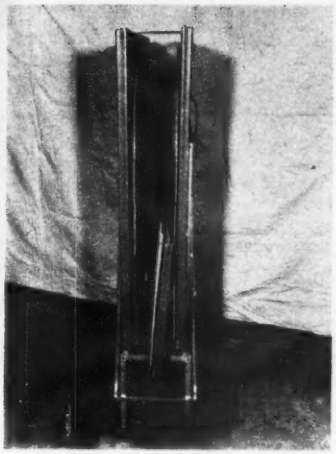
Remove springs and place opened bed frame on a level section of floor. If frame top does not parallel floor, build up the "short" legs with wood blocks. If center section is higher than side sections, re-drill holes at pivot point so that side planes rise ⅛ inch over center section; later, this allows center panel to bridge side panels easily.

Use ½-inch plywood; size of frame will determine length and width. However, since plywood is made in 4x8-foot sheets, this size is recommended. Saw a 20-inch section of plywood from one end and halve the remaining piece to get two 38x48-inch pieces.

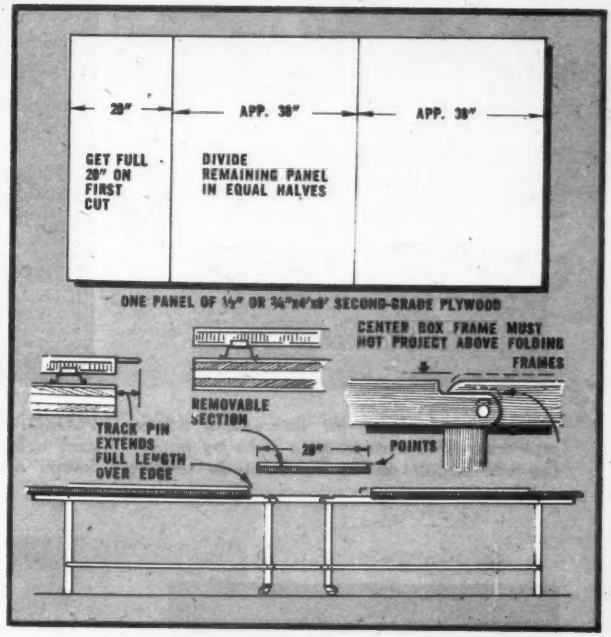
Drill four ¼-inch vertical holes through the folding sides of the frame; one about four inches from pivot point and another about four inches from end of frame on each side. Repeat this on the other folding section.

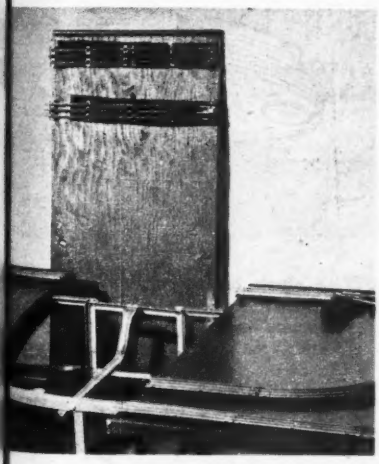
Place the three pieces of plywood together on the floor, smooth side down, with the 20-inch piece in the center. Center the frame upside down on the plywood and mark for required holes. Remove frame and drill ¼-inch holes through the plywood where marked.

Enlarge the four holes in *one* folding side of the frame to 1½ inches by drilling a series of four or five holes, chiseling out bridging and filing smooth. It is important to make the slots in the right direction, that [*Continued on page* 156]

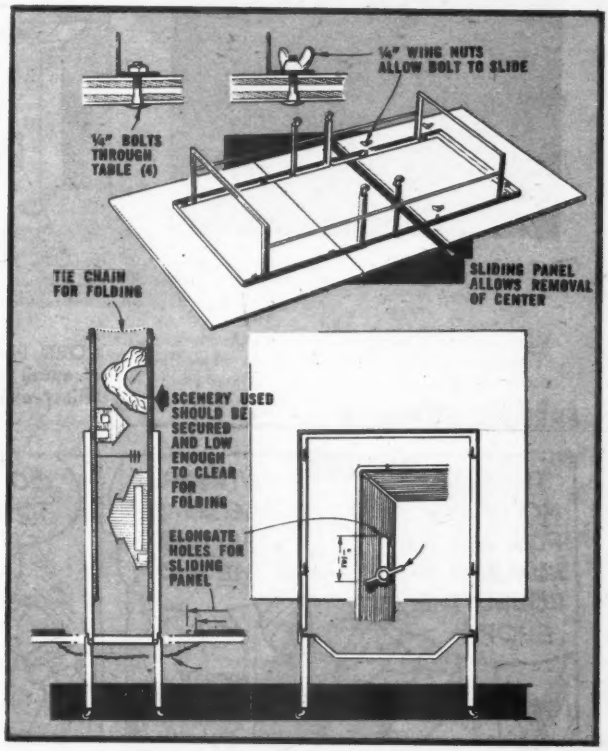


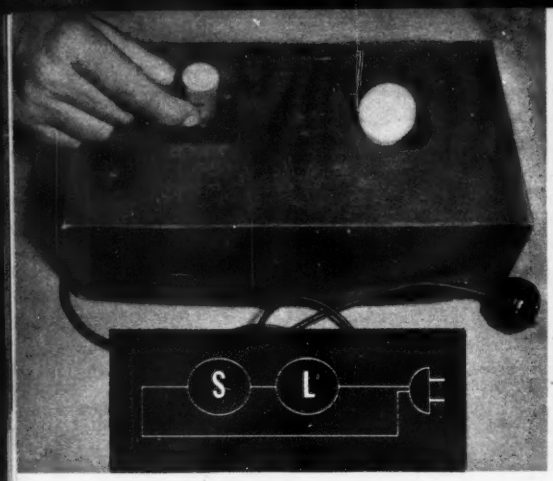
FOLDED TRAIN TABLE is ready to roll into storage. Removable center piece lies between two folding panels.



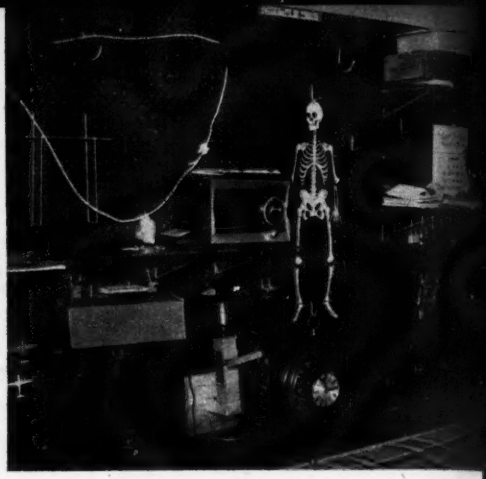


REMOVABLE PANEL shows how train table accommodates various track layouts that end at panel edges.

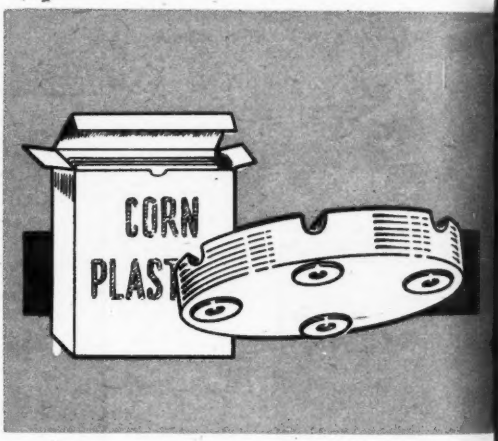




FAULTY STARTERS for fluorescent lights will cause 7½-watt bulb to light by shorting out circuit on this homemade tester.

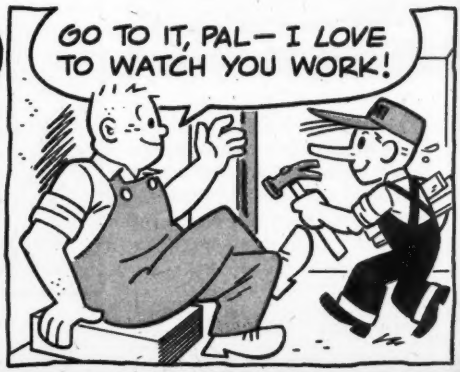


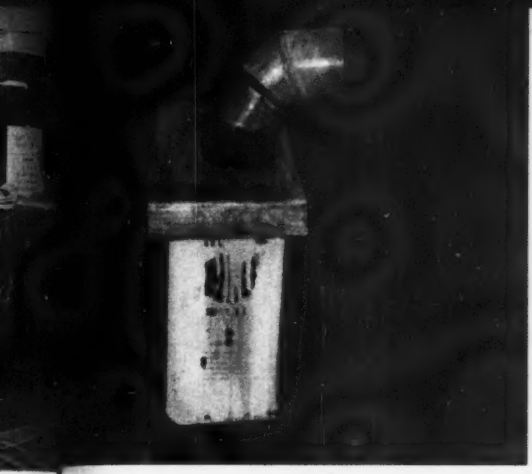
PEGBOARD of perforated Masonite displays and holds those treasures of Junior's and keeps 'em out from under foot in his room.



CORN PLASTERS stuck to the undersides of small appliances, vases and ash trays will prevent scratches on table surfaces.

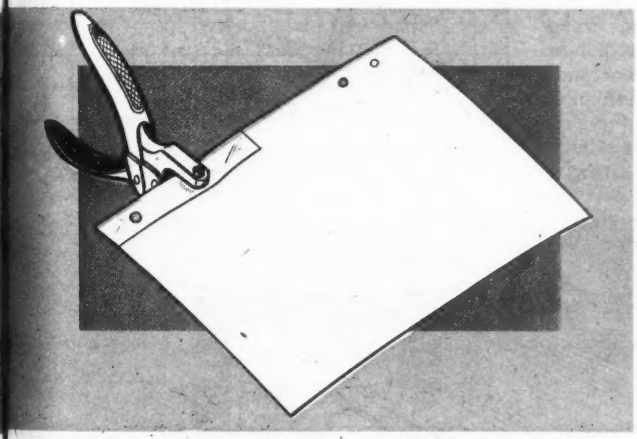
FREDDIE FUMBLES





LINT from automatic drier doesn't require outside depository when funneled through pipe elbow into half-filled can of water.

CHRISTMAS CANDLES of your own design can be formed by melting down old candle stubs and pouring the wax into glassware.

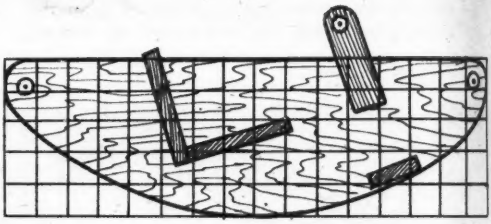


SCOTCH TAPE bent over the holes of loose-leaf notebook paper will prevent tearing and possible loss. Repunch holes through the tape after it has been applied to paper.

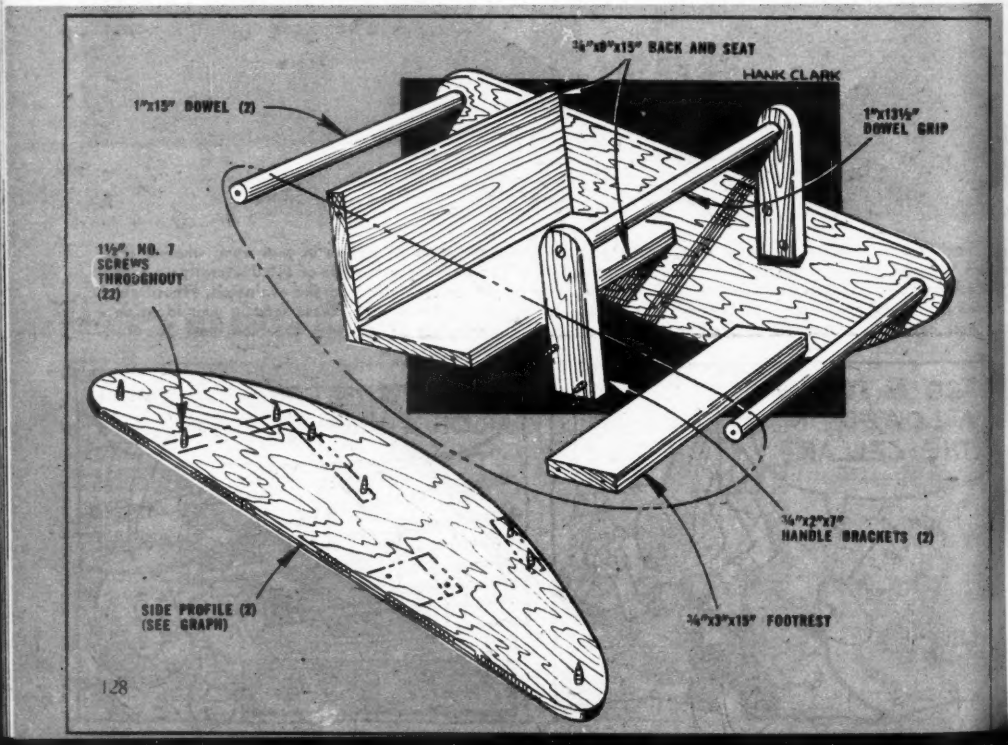
Send Freddie Fumbles your idea of a good short-cut, time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Please send in your ideas on a post card only. Address to Freddie Fumbles, *Mechanix Illustrated*, 67 W. 44th St., New York 36, N. Y.

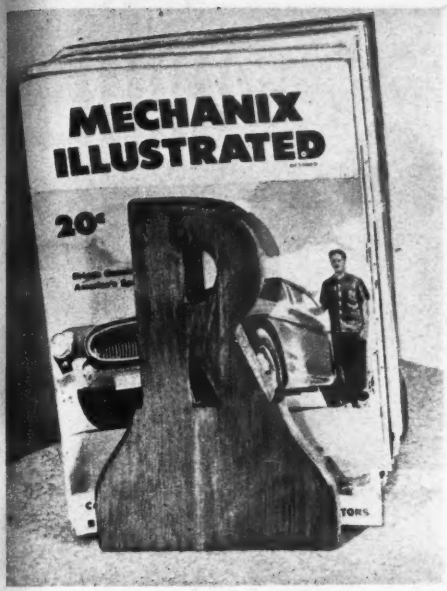
TOT'S ROCKER

YOUR youngster will spend many enjoyable hours using this easily-built rocker. Make the sides from ½-in. plywood and cut the cross-pieces from old broom handles or 1-in. dowel. The seat and footrest are made of solid stock. If you like, pad the seat with foam rubber and cover it with plastic. Decals, purchased at a paint store, can be applied after painting. •



Drawing above shows side laid out on 2-in. squares and location of internal members.





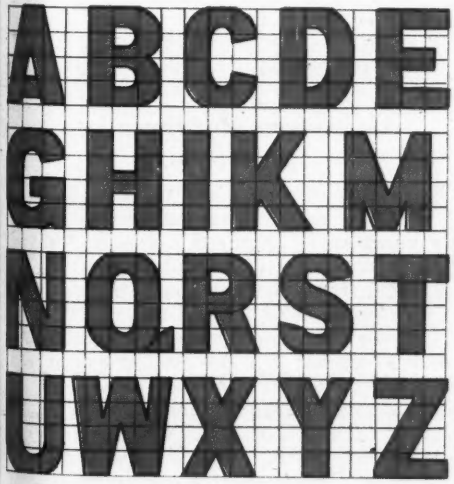
Make It AS A Gift

Personalized Book Ends

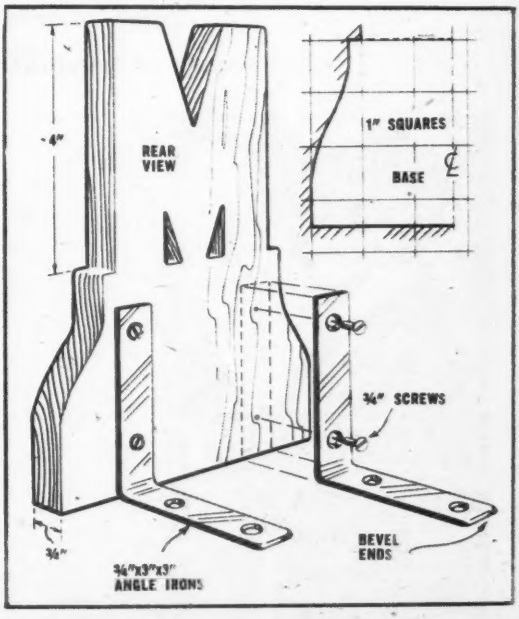
By Roberta L. Fairall

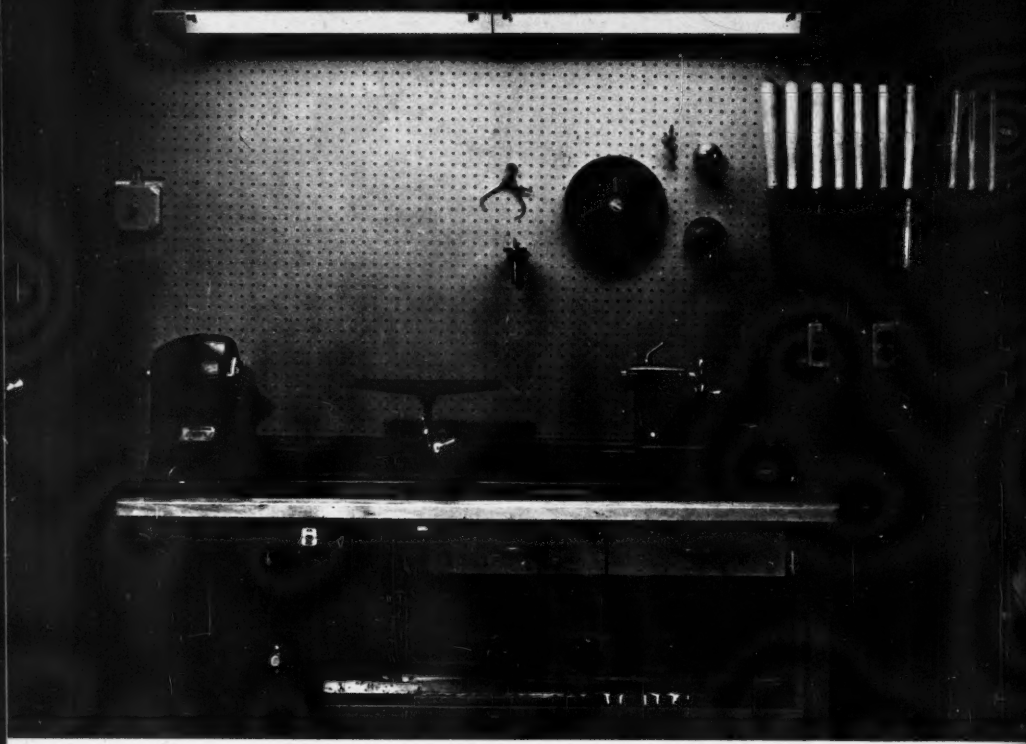
THESE ¾-in. thick hardwood book ends are tall enough to hold even magazines in an upright position. Start construction by laying out the desired initials on paper ruled to 1-in. squares, as shown in our drawing below. Trace them with carbon paper onto your stock —redwood or any other hardwood can be used. Cut the pattern with a jig saw and sand smooth with fine sandpaper.

To make a pair of these book ends get four 3-in. angle irons and screw two to the back of each letter. Use a file to bevel the free end of each iron so it will easily slip under a book. Finish with two coats of spar varnish, remove the glossy shine with steel wool and polish with paste wax. •



LETTERS are ruled on inch squares. Note, right, how base and letter form one piece.





SHOP WALL

The pegboard beats 'em all when it comes to versatility and neatness.

By Robert Hertzberg

MARK EACH POINT where vertical furring strips will fit on wall at 16" intervals.

"WHEN are you going to do something about those bare walls in the basement?" inquired my wife for the nth time. So, after stalling the job for about three years, I finally decided to tackle the wall in my cellar shop.

I chose Masonite Duolux pegboard for two reasons: (1) The evenly spaced holes over the entire surface provide a flexible and convenient means of displaying tools and accessories; and (2) The big four- by eight-foot sheets cover a large wall area with a minimum of butting joints.

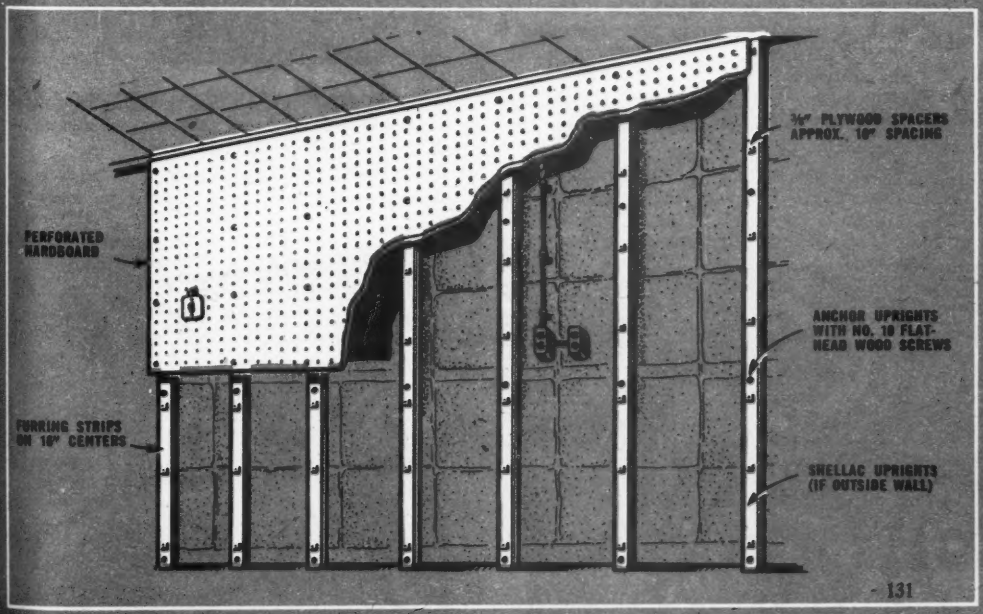
The actual attaching of the Masonite to the furring strips turned out to be

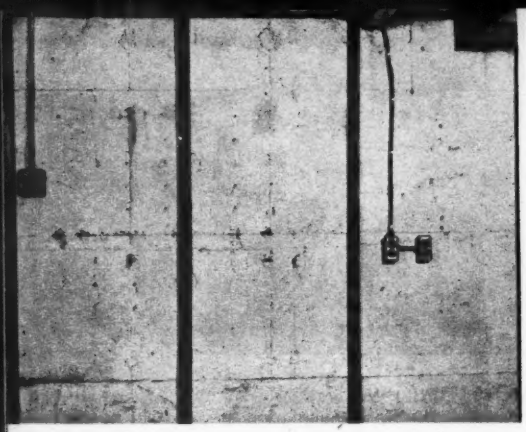
RAMSET TOOL drives nail directly through furring strip and deep into concrete wall.

STAR DRILL will cut hole in high-density concrete wall. Anchor plug is sunk later.

TOP SCREW is partially turned in to hold strip while remaining holes are drilled.

SCREW HOLES drilled through a supported furring strip serve as guides for star drill.





FURRING STRIP installation is completed. All conduit will be covered by pegboard.

PLYWOOD SPACERS, about ⅜"x1"x1", are nailed to furring strips at 16" intervals.

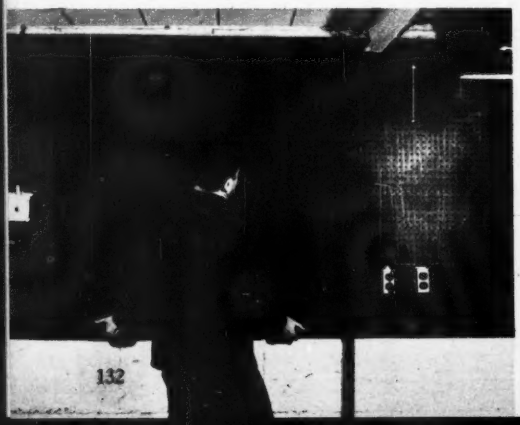
the least trouble. The real work came in installing the furring strips on the cement wall.

Furring strips are usually 8- or 16-foot lengths of wood ¾ by 1¾ inches wide. How they are installed depends on the nature of your walls. With medium-density concrete or cinder block walls you can nail up the strips with the aid of a tool called the Ramset. This tool consists essentially of a heavy steel handle with a floating driver rod through its center. The nails used are specially tempered and are sold under the trade name "Shure-Set." The Ramset supports the fastener at right angles to the wall so that when it is hit solidly with a heavy hammer the fastener is driven straight in and does not glance off sideways.

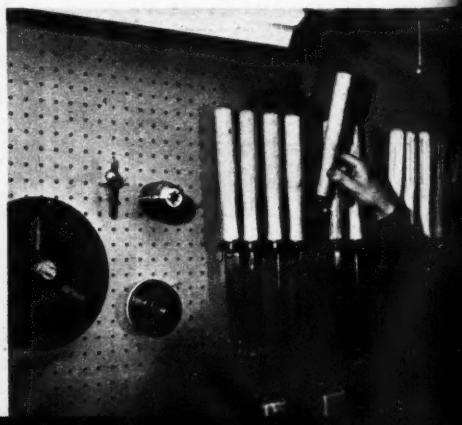
However, concrete walls of high density will re- [*Continued on page* 156]

SHELLACKING or painting furring strips is a must if wall has any tendency to sweat.

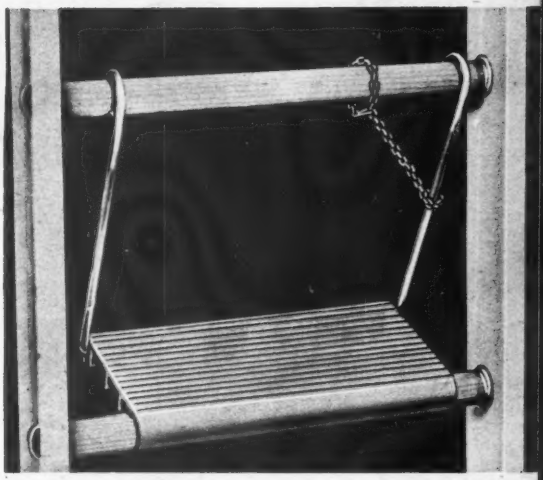
PEGBOARD PANEL is fitted over furring strips. Note cutouts for switch, outlets.



WIRE HANGERS are adaptable to various arrangements; here they hold lathe tools.

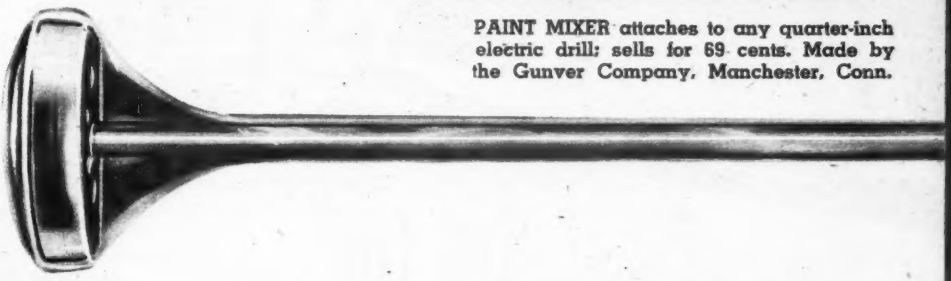


FRESH PAINT TIPS



STEP REST, made of aluminum, is attached to ladder at any rung to ease feet. Made by the R. D. Werner Co., of 295 Fifth Ave., N.Y.C.

PAINT MIXER attaches to any quarter-inch electric drill; sells for 69 cents. Made by the Gunver Company, Manchester, Conn.

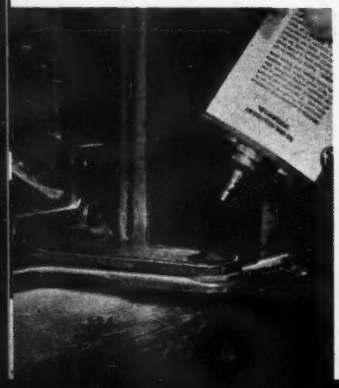


CLEANING RIM of paint can before replacing the cover will permit an air-tight seal.

LINE ROLLER TINS with aluminum foil and you will find the clean-up job a cinch.

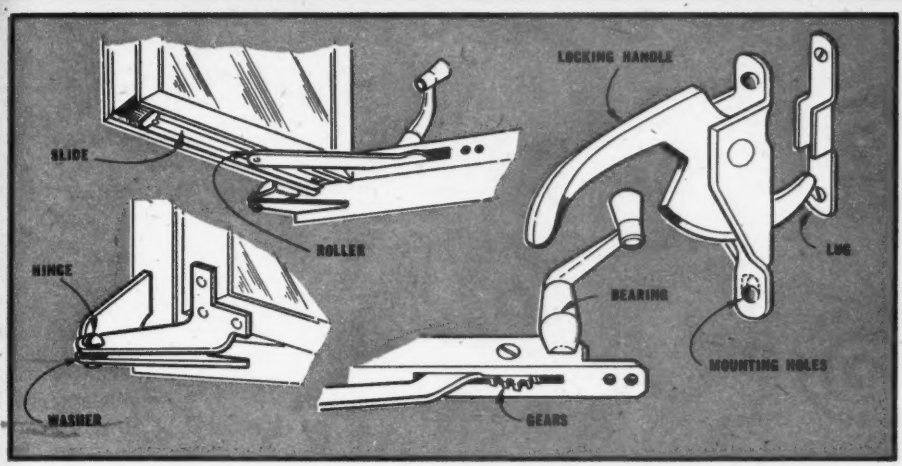
First Aid for CASEMENT WINDOWS

LIGHT OIL applied to hinges restores ease of operation.



WIRE BRUSH cleans the track on which the opener arm rides.

APPLY graphite grease to grooved track of casement.



SNUG-FITTING, easy-to-operate casement windows are hard to surpass in beauty and convenience. Because they open *out* and are adjustable, they can coax the softest summer zephyrs into the house. Being metal, they will outlast the ordinary sash window by many years. Casements do require occasional maintenance, however, and the accompanying photographs illustrate the treatment prescribed for their most common ailments.

A screwdriver, a pair of pliers, some graphite grease, a wire brush and a bit of light machine oil are the only tools and lubricants you will need for most of these repair jobs. When your casements are working correctly again, an occasional lubrication of gears, handles and hinges will keep them that way. •

CARDBOARD SHIM inserted between handle and frame tightens loose locking action.

ROTARY OPENER unit must be replaced when gear wears out.

GRAPHITE GREASE will lubricate rotary gear many months.

ENLARGE handle's holes to oblongs to better grip lock.

Tape Storage Cabinet

Elegance and utility are combined in the design of this versatile home unit.

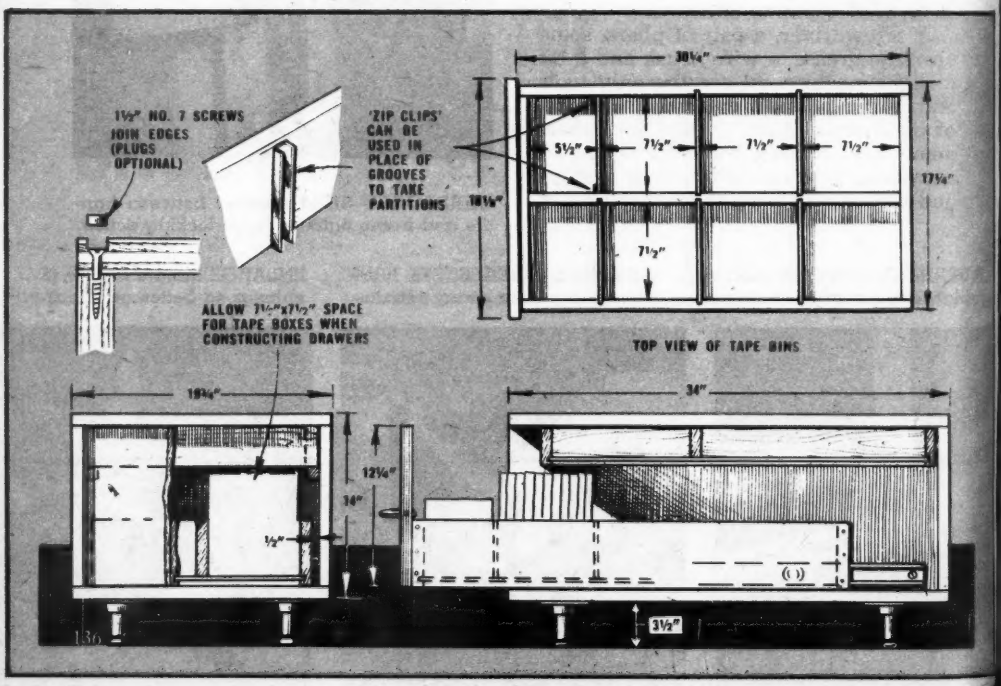
By Ron Anderson

TAPE recording—with more than a million recorders in use today—is one of the fastest growing hobbies in America, but a big problem recording fans are beginning to encounter is where to store their tapes neatly and handily.

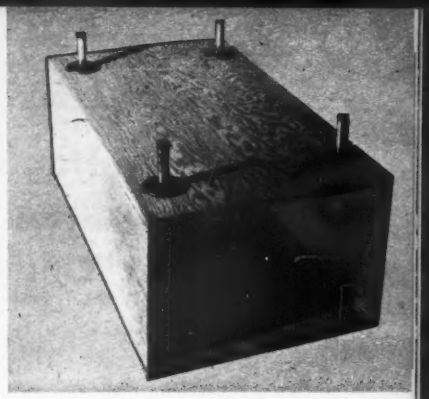
If you're tired of the peek-and-seek technique of locating those errant reels, here's a workshop project to bring order out of the chaos.

This portable tape storage cabinet, made of plywood and styled in the modern mode, will serve as a convenient end table as well as a home for your recorder and some 88 tapes.

Only 19¾ inches wide, 17½ inches



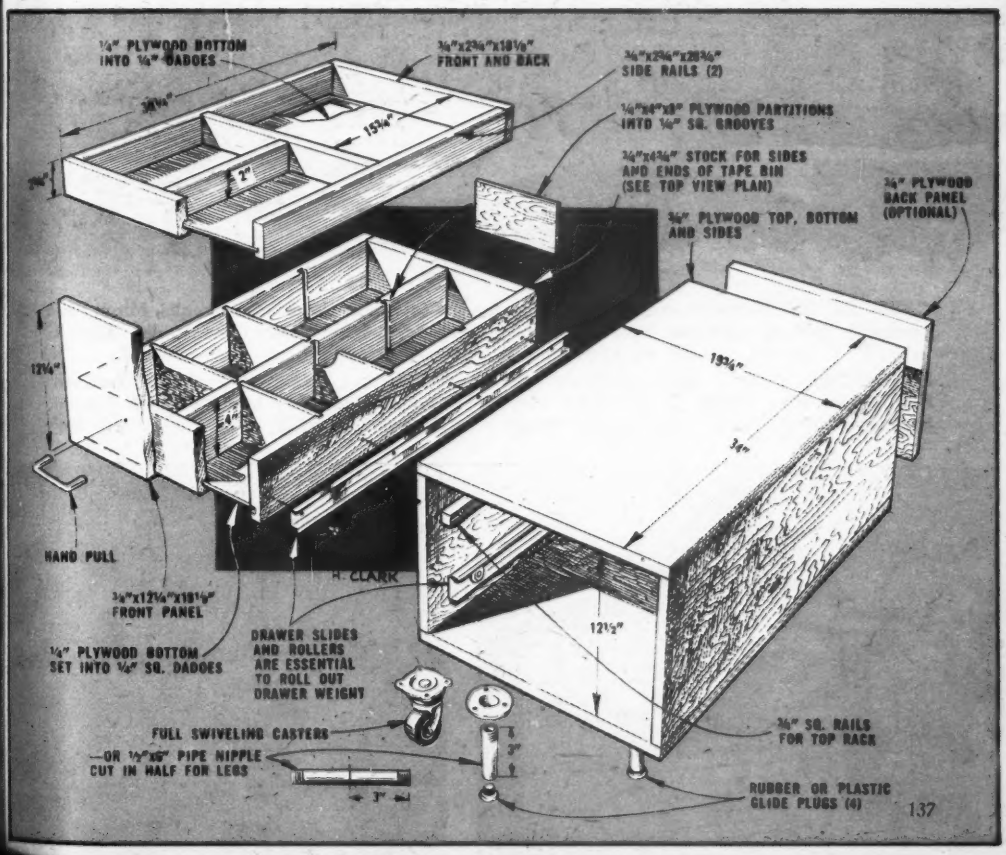
OPEN CABINET DRAWERS show spaciousness of tape and accessory storage areas.



CABINET LEGS are of three-inch pipe that screw into metal flanges on bottom panel.

high and 34 inches long, it will also hold patch cords, connectors, splicing tapes, etc. It has two drawers—one for tapes and the other for accessory items including the recorder lid.

Before starting construction, plan your tape storage space properly to make sure the accessory drawer will be large enough to hold the recorder lid. To meet these requirements it is best to build the cabinet "inside out," that is, build the [*Continued on page* 157]



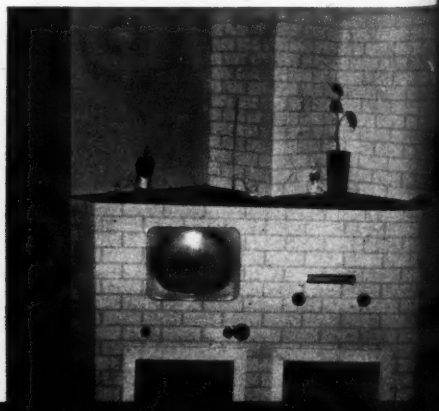
Golden Hammer Award Winners

Each craftsman whose project is shown has received a 24-karat gold-plated Hammer and a Workbench Award Certificate. How about sending us a *black-and-white* photo and *full* description of your latest project? If you aren't a winner you may still receive as runner-up prize a 14-karat gold-plated Golden Hammer Tie Bar or MI's Certificate Of Merit. Photos of you and your workshop are also eligible. Send entries to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N.Y. If you want entries returned, please enclose postage. Entries cannot be acknowledged.

CABIN IN THE WOODS was built by Lawrence Clark and son of Minneapolis, Minn. Professionals put up framing, but all finishing, plumbing, wiring was done by the Clarks.

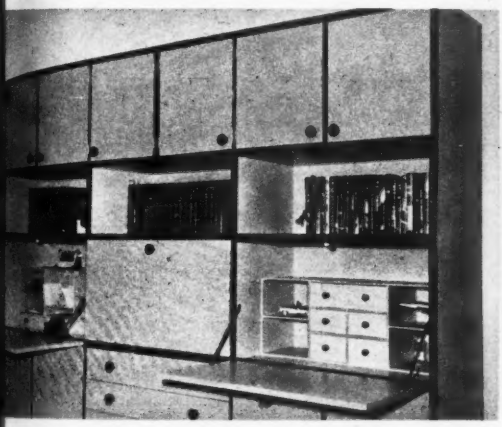
PLAY HOUSE, planned and built by Earl D. Kern, Palo Alto, Calif., cost $65. It has beamed ceiling, gable windows, tile floor.

HI-FI and television cabinet matches abutting chimney brick. Michael Lynch, Keansburg, N. J., built the TV set too.



The following craftsmen have been awarded GOLDEN HAMMER TIE BARS for their projects: Harold M. Bigley, Detroit, Mich. . . . George C. Sieble, San Francisco, Calif. . . . Tony R. Wood, Columbus, Ga. . . . William Douglas, Gilman, Ill. . . . W. F. Newby, Midland, Tex. . . . Jon Griem, Appleton, Wisc. . . . Harry J. Miller, Sarasota, Fla. . . . Jack L. Miller, Arlington, Calif. . . . Laurence J. Boh, Ludlow, Ky. . . . Joseph Campisi, Glendale, N. Y. . . . Anthony E. DelGuidice, Yonkers, N. Y. . . . Leroy Coleman, Tulsa, Okla. . . . Larry W. Anderson, Seattle, Wash. . . . James Buffenmyer, Lombardi, Ill. . . . John V. Provens, New Rochelle, N. Y. . . . Richard Starrett, Los Angeles, Calif. . . . J. E. Goff, Jr., Philadelphia, Pa. . . . David Balogh, Los Angeles, Calif. . . . Leo E. Homeyer, Collinsville, Ill. . . . Charles V. Trombley, Bay City, Mich. . . . Howard [Continued on page 158]

WALL CABINET is of spruce, plywood and Masonite, stands six feet high and eight feet long. Don Prieston, Downsview, Ont., Can., has plenty of room now for his record collection, hi-fi set, books, clothes.



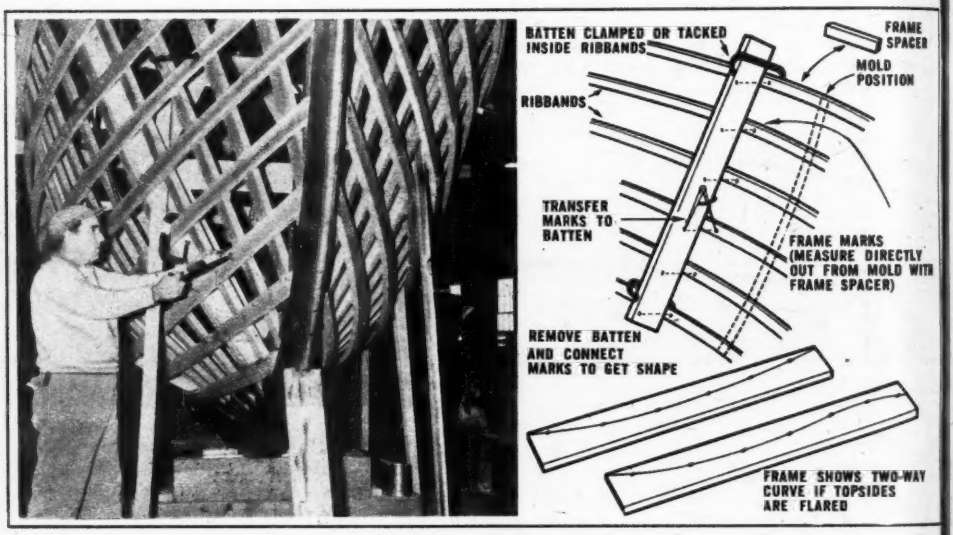
FIELD STONE HOUSE represents a total of three years' toil by Jacob Auiderklam of St. Marys, Pa., who did all masonry and construction work singlehandedly.

GARAGE measures 14x21 feet in addition to the 3-foot overhang. It cost builder Roman Trzcinski of Trumbull, Conn., $800. Friends helped pour concrete floor, but all other work he did alone in 5 months.

SIX-ROOM HOUSE was built from original plans by Alfonse Martino of Evans City, Pa. It took three years of part-time work to build, has a full basement, and boasts a two-car garage as an annex.

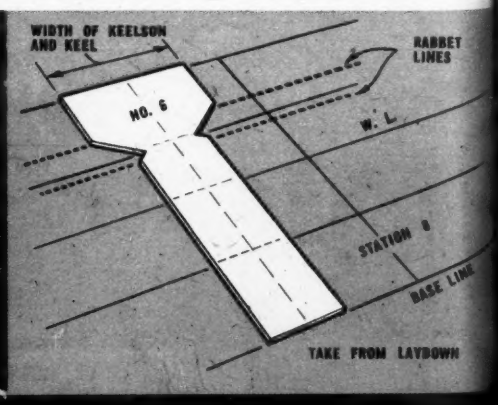
BOATBUILDING TIPS

By Jim Emmet



STEAM-BENT FRAMES aren't necessary near the bow of a boat. Saw the last half-dozen or so, taking the curves as shown in the drawing, and they'll go in straight and true.

PLYWOOD KEEL PATTERNS, made full size from laid-down lines, give keel and keelson height and rabbet lines, help in setting up backbone members and in making rabbet cuts.



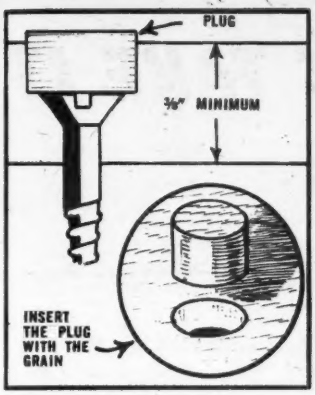
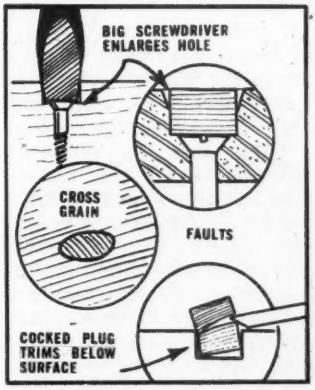
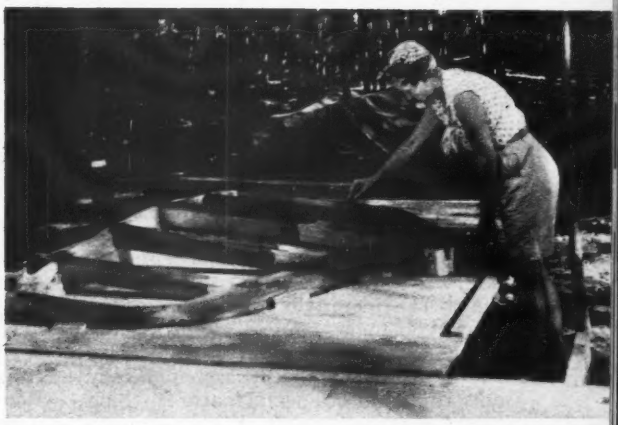


Photo and drawings by Delta Power Tools

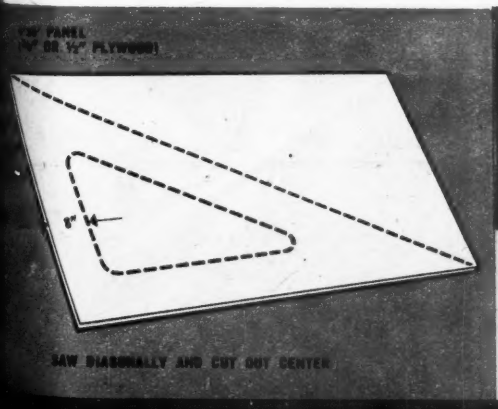
SCREW PLUGS are easily cut on the drill press with a plug cutter. Operate at 1800 rpm for plugs under a half inch and 1200 rpm for larger sizes. Glue plugs in with grain, chisel flush and sand.

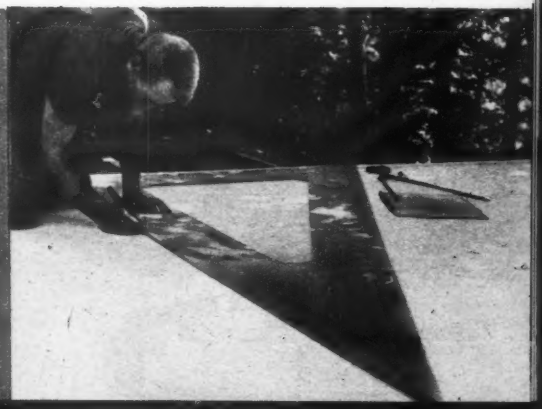




TRANSOM which is rounded and raked is best framed on a separate "floor" to which the full-scale lines have been transferred from the main laydown. Temporary fastenings hold it.

OUTSIZE TRIANGLE is a handy tool when you're laying down the lines of a boat; use it to get station lines and other upright lines truly perpendicular to the base line.





CAN YOUR TIRES TAKE IT?

By Frederick C. Russell
Member, Society of Automotive Engineers

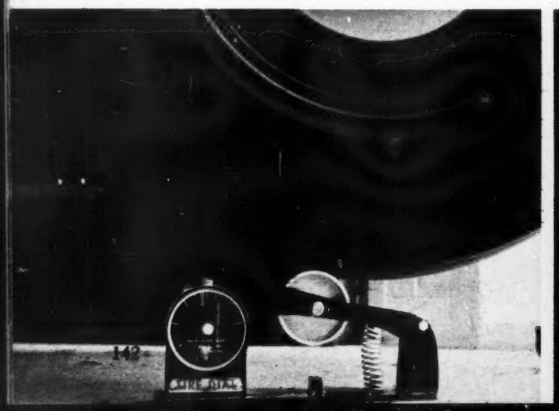
LOOKING at four brand new tires on your car may seem to be good reason for cheering, but don't be too sure about it. What you have purchased may be all wrong for your particular car or the special way in which you will drive it. Your new tires may not even be safe for it!

There are many reasons for this situation. We're accustomed to seeing tires widely advertised at knock-down prices. We jump to the conclusion that if a tire has whitewalls it must be superior. We assume that the tires that came with the car are best for it, not realizing that the car maker is primarily interested in providing a tire that gives the best ride. Complications ensue when you make a "deal" with the car dealer to get a better set of tires. Unless skillfully handled the change may not provide those special features which your car and your driving may require.

Suppose you are going to drive extensively in the Middle West or Southwest where speeds are high and sustained and where temperatures hit the peaks. Here your need is for rubber that will withstand the extra heat caused by energy expended in transferring engine torque to the road. The fact that so many owners fail to consider this point is well illustrated in the news that 81 per cent of adjustments made by tire dealers are in these areas. In the Northeast adjustments drop to 32 per cent. But here we find a big upswing in skidding accidents. For best results in this territory tires should be selected not only for maximum traction but for good cornering ability.

How you use a set of tires is a big story. Starting on a midsummer cross-country trip in a heavily loaded Buick Roadmaster one owner was indeed lucky to have experienced only four

TIRE DIAL tells the serviceman just how much out of round any auto tire may be.



PRESSURE should be checked when tires are cold—especially before taking a trip.

CAR CARE

punctures. He had two new tires but they were not equal to the strain. When another motorist bought a good used Packard he was quite pleased to note that the wheels carried four new whitewall tires. He may some day learn that they are third grade tires.

Price continues to be an excellent guide to quality, but you still can go way off the track by selecting tires that are not right for *your* car. There are no bargains in tires. Especially misleading is the familiar newspaper advertisement which, in large type, quotes a temptingly low price for your favorite make of tire. You have been shopping a bit and have not seen a price as low as $11.50. But if you pause long enough to examine the deal you may find that the price is for a 6.00x16 tire which would be about as useful to you as a fur-lined linen duster. Other strings also are attached to some of these deals. To this tempting price you must add Federal tax and perhaps a sales tax as well. And you must also turn in an old tire with a casing sound enough to be able to take a recap. Further down in fine print you find that the size tire you really need for your car—a 7.60x15—has been marked down to $17.75. Un-

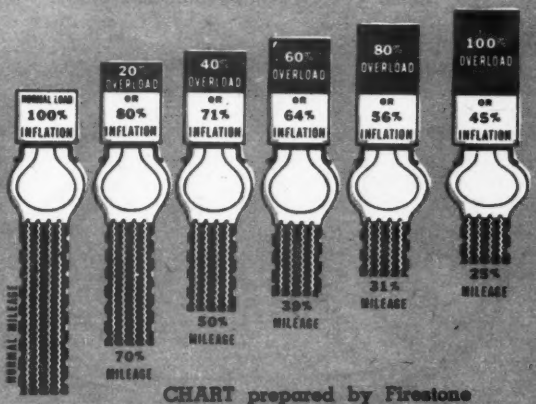
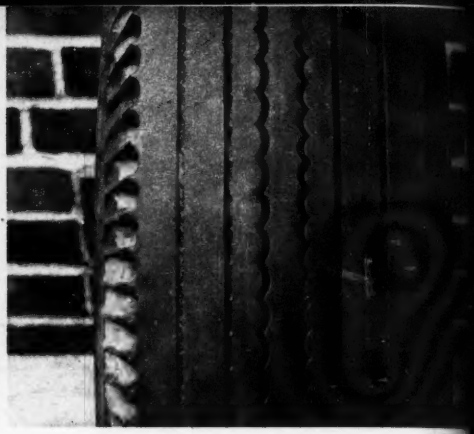


CHART prepared by Firestone shows how the normal life or effective mileage of a tire on a 15-inch rim is cut down by overloading or underinflation.

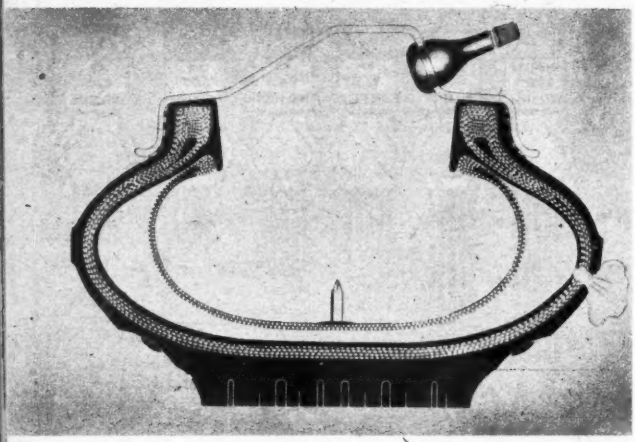
SIDEWALL ABRASION occurs when tires are abused by running them against curb.

PIECE OF GLASS on the road will make a slash similar to the one shown below.

TYPICAL BLOWOUT is shown above. Tire is ripped completely through the lining.

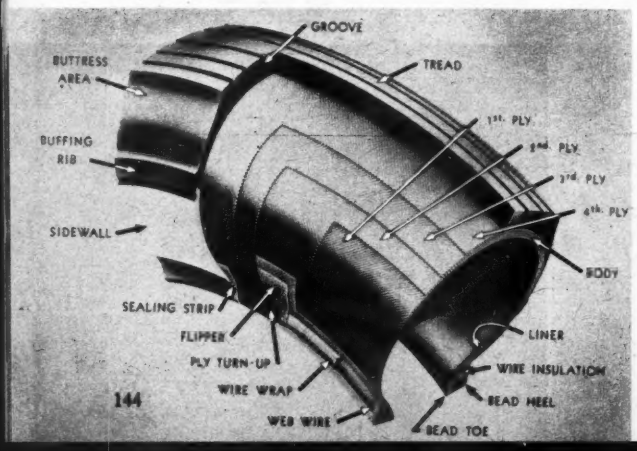


UNDERINFLATED TIRE wears out faster on the outer edges: note sharp center treads.



CENTER VALVE in this Firestone tire closes when the outer chamber is punctured.

CUTAWAY VIEW shows the construction of a typical tire made by U. S. Rubber.

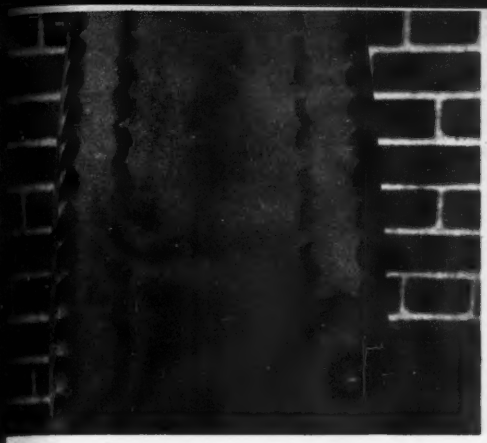


fortunately it is a blackwall job whereas you want whitewalls. These have been reduced to $21.00 each!

Looking still further you discover that you are reading quotations for tube-type tires, a tubeless job in your size with whitewalls is $23.00. And if you want tires with nylon cord casings add another $8.00. Thus your vision of a complete replacement of tires for just under $50.00 has now swelled to $120.00. Oh, well.

It is surprising how much more safety and value you can get for a little more investment per tire. Last winter I had a blowout with a snow tire—a six-ply recap. The break developed on the wall toward the car where moisture got into a cut to rot the cord. This would not have happened with a casing made of nylon.

Since price is an important index of tire quality we are apt to jump to the conclusion that it is always smarter to dig deeper into the till whenever buying tires. The limited driving done by many motorists, especially with second cars, makes even factory equipment tires satisfactory enough. This is well illustrated by the fact that



OVERINFLATION makes a tire wear out down center where treads make contact.

ROTATION of tires between hubs helps assure that they will wear out evenly.

racing tires, which certainly have all the top qualities, would be too stiff in construction for the car which daily has to bounce over a neglected stretch of road to the railroad station, the shopping center or the factory. These tires have much harder rubber for their treads which means that the car could easily skid on wet paving. Some premium tires now have special inner containers to provide holding power in event of a blowout or a bad puncture. Doctors, travelers, people who use superhighways or commuters who daily skim through tunnels, need this feature. For ordinary motoring an occasional puncture may be no problem at all.

Few tire buyers realize that premiums have deeper treads. Other things being equal these tires should be able to wear longer. But—and this is important to the long-distance traveler—the heavier tread increases rolling resistance, or drag. On a light car, with a lively mill under the hood, a premium tire may be a disadvantage from a performance standpoint.

Premium tubeless tires have some form of sealant and there's a difference in type as well as methods for handling it. To prevent flow of sealant, which at high temperatures can throw a tire out of balance, Seiberling has provided special compartments on the inside of the casing to act as baffles.

Tire Size	No. Plies	Maximum Tire Loads at Various Inflation Pressures			
		20	22	24	26
6.40-15	4	855	910	955	1000
6.70-15	4	955	1010	1065	1115
7.10-15	4	1025	1080	1140	1195
7.60-15	4	1125	1190	1255	1310
8.00-15	4	1195	1265	1335	1395
8.20-15	4	1265	1340	1415	
	6	1265	1340	1415	1485
8.90-15	6	1465	1555	1635	1715

Tire Size	No. Plies	Maximum Tire Loads at Various Inflation Pressures			
		20	22	24	26
7.00-14	4	880	925	975	
7.50-14	4	980	1030	1085	
8.00-14	4	1060	1115	1175	
8.50-14	4	1140	1205	1265	
9.00-14	4	1220	1290	1355	
9.50-14	4	1320	1395	1465	

Firestone Tire & Rubber Co.

CHART shows permissible tire load for each of four tires at various pressures.

To minimize blowout danger, the tire shopper will find several different kinds of inner diaphragms. In the Firestone Supreme a special valve in an inner container traps air so that the tire does not go flat immediately. Goodyear's Captive-Air tire provides similar safety.

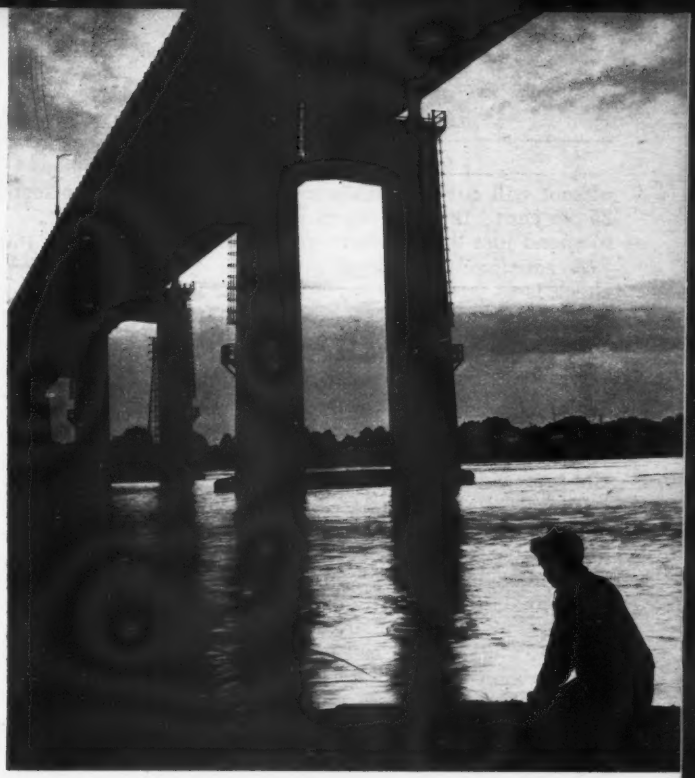
Fisk is offering [*Continued on page* 166]

MONTHLY PHOTO CONTEST

1st Prize ($25) .....Pattern in Steel
Yook O. Hom of Brooklyn shot with a Rollei, used Plus X film and K2 filter; setting: f-8, 1/100th.

Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Address entries to: *Mechanix Illustrated*, Photo Contest, 67 W. 44th St., N.Y.C. 36.

$10 Award .....Desert Mission
A Speed Graphic loaded with Royal Pan film was used by Frank Meitz of Los Angeles. He shot at f-16 and 1/100th, darkened sky with a G filter.



$10 Award .....Reverie
Late afternoon light silhouetted bridge and figure for Stephen Syrotiak, East Haven, Conn. He used Rollei, Plus X and yellow filter; f-11 at ½.

$10 Award .....Icecapades
C. W. Grimes, Charlotte, N. C., made the exposure with flash after setting his Rolleiflex camera for 1/500th at f-5.6; action froze on Tri X film.

[*Continued from page* 114]

of soot will cut fuel efficiency by at least 25 per cent. In other words you will have to spend just that much more for fuel.

A satisfactory way of making a flue check is to scrape the surfaces of the flue in several places with a screwdriver. With the aid of a flashlight, see how far you have to dig to expose bare metal. If the accumulation is excessive, better call your dealer and have him do the actual cleaning. In milder cases, you can handle it yourself with a steel brush and a commercial-type vacuum cleaner.

There's one more general check you can make before your furnace or boiler is fired up for the winter. See to it that there is some avenue by which fresh air can enter the basement. All too often an otherwise perfect heating plant operates at minimal efficiency because it is starved for "combustion air," as the engineers call it. Generally a one-foot opening is sufficient to supply this air.

The final check should be made as soon after the beginning of the heating season as possible. This time you're interested in locating leaks around fire doors, clean-out doors and inspection ports.

Close all fire and clean-out doors and open the smoke pipe damper. Now take a lighted candle and pass it around all door edges, seams and smoke pipe joints and bends. If there are any leaks, the candle flame will be sucked into the leak. Make necessary repairs with furnace cement.

It's a good idea to have your furnace dealer check the furnace every few years as leaks are likely to develop inside the furnace casing where it's impossible for you to locate them by candling.

Check Points For Coal-Fired Systems

If yours is a coal-fired furnace or boiler, be particularly thorough in making the chimney and smoke pipe checks just described. Another necessary inspection is of the grates with which you "shake down" the fire.

The grates should be thoroughly cleaned along with the firebox and ash pit. Then with a flash or trouble light, carefully look for broken or damaged grate sections while rotating the grate handle. Replace any broken sections immediately.

Check Points For Oil-Fired Systems

There isn't much to check on most modern oil burners. This is because they are relatively trouble-free and whatever adjustments do become necessary are best left to an experienced serviceman.

The best way to check the operation of your oil burner is to ascertain from your fuel-oil man exactly how a well-behaved burner flame should look. Then you can make monthly inspections and report any deviations to your dealer.

You can also periodically lubricate the burner motor with medium weight, high-grade motor oil and check oil-line fittings for leakage. Wipe each fitting clean and then with a clean white cloth or blotter touch the underside of each fitting for evidences of leakage. Temporary repairs can be made with pipe compound or "gasket-goo," but it's best to call your dealer and have him replace any worn fittings.

If your oil burner should suddenly stop operating in the middle of a cold winter night don't put in an excited phone call to your dealer until you have at least checked your fuse box. Many a dealer has justifiably "blown his top" when he learned that a customer's 4:00 a.m. "emergency" was caused by a blown fuse.

Gas-Fired Systems

Like oil-fired heating plants, gas-burning systems require little upkeep. Your dealer will show you what the pilot and burner flames should look like when they are operating properly. Later it will be up to you to report any abnormalities to him promptly.

At the beginning of each heating season you should check the operation of the safety device that cuts off the gas supply in the event of pilot-light failure. To do this, turn on the gas and ignite the main burner in the normal way. Now shut off the pilot light. The burner flames should extinguish in a few seconds. If they don't, call your serviceman immediately and have him locate and fix the trouble.

A once-a-year cleaning of the burner itself isn't a bad idea either.

[*Continued on page* 150]

Photography Today

PICTURE-TAKING HALF of combination Wittnauer camera-projector.

"HEY, Tom, wanna see my new movie?"

"Sure."

So Tom ambles over to the house and you show him your new Cine-Twin.

"How do you like it?"

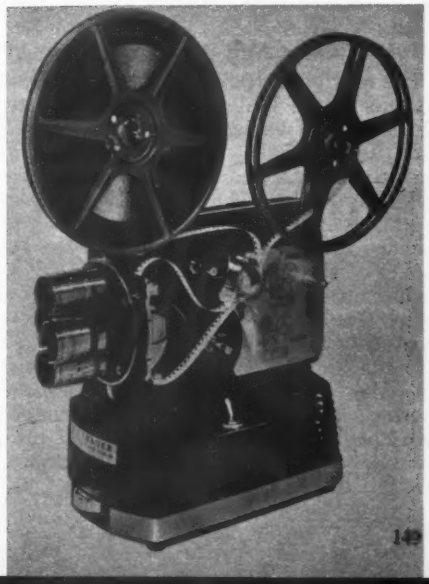
"Gee, it's swell."

This is your cue to state off-handedly, "Do you know it will also show movies as well as take 'em?"

"No, honestly? Lemme see."

"Sure, let me show you."

Well, this is the supreme moment of your life. Imagine someone *asking* to see your home movies instead of first having to bribe him with a dinner, locking the doors [*Continued on page* 158]



TO SHOW MOVIES, camera is locked to the projection base and cord plugged into AC.

[*Continued from page* 148]

Remove the burner from the firebox carefully to avoid disturbing the air intake adjustment. Probe through the ports with a length of wire, shaking out any dislodged scale. Check to see that the air intake port is not obstructed.

Up to now we have been concerned with the actual *heating* parts of your system. Now we are ready to start checking those parts that control heat distribution.

Check Points For Warm-Air Systems

Make sure that both the warm-air and return-air registers are unobstructed and that the registers open and close properly. A few drops of oil on the levers that control the register louvers will help.

Now inspect the ductwork that carries the warm air throughout the house and returns it to the furnace. Check for open places in sheet-metal joints and see that all hanger straps are tight.

The owner of a forced warm-air system has three additional check points. Of these the most important are the air filters —cleaning the permanent type and replacing the throw-away Fiberglas variety.

The next check point is the blower that circulates the warmed air throughout the house. You should see to it that the blower's bearings and motor are periodically lubricated with No. 30 motor oil.

The final check is of the unit's humidifier. This should be cleaned once a year.

Hot-Water And Steam Systems

The first check point on either of these systems is the boiler drain cock. Draw off a sample of water and note if it is loaded with rust and scale. Drain, flush and refill the system with clean water if the sample is heavily loaded. Addition of a rust preventative at this time is recommended to prevent excessive rust buildup in the future.

Other common check points are the air vent valves on the radiators, the radiator shut-off valves and the pipes that conduct steam or hot water to the radiators. Each air valve should be checked before the heating season begins. Remove the valves and clean with a length of wire. If they are badly clogged, it is best to replace them as they are quite inexpensive.

Shut-off valves and pipes will have to be checked after the boiler has been fired up. Look for steam or water leaks at all pipe joints and have repairs made immediately if any exist. Steam and water leaks not only rob you of heat but are injurious to structural wood timbers and floors. Leaks that are not too serious can be repaired with special preparations which are added to the boiler water.

Safety or pressure relief valves on both steam and hot-water systems should be checked. On a hot-water system this can be done efficiently while the boiler is cold. Fill the boiler with enough water to boost the system's pressure over the 30-pound limit. The relief valve should open and expel enough water to drop the pressure below 30 pounds. If it doesn't, have the valve replaced rather than attempting to repair it. After making this test, be sure to drain off sufficient water to bring the pressure down to the proper operating level—about 12 pounds.

With a steam system, you can usually make a visual check of the valve.

Electric Heating

Local electric power rates are the determining factor in whether or not you will seriously consider installing an electric heating system in your home. If you find that you can heat your house for one cent per kilowatt hour or less, then it is worth investigating. A higher rate usually prices electrical heating out of range of the average homeowner.

Types of electric heat vary from embedded panel heating (either wire or rubber) to glass panels. Convectors with fans, wall heaters and even hot water generators that take the place of a boiler for a hot-water heating system are integral parts of many of these systems.

Ceilings, walls and floors should be thoroughly insulated when electric heat is used. Naturally, wiring requirements must meet the standards of local building inspectors.

In any event you should call your dealer for a full check of your heating system at least once every two or three years. A well-cared-for heating plant not only makes winters comfortable, but increases the value of your home. •

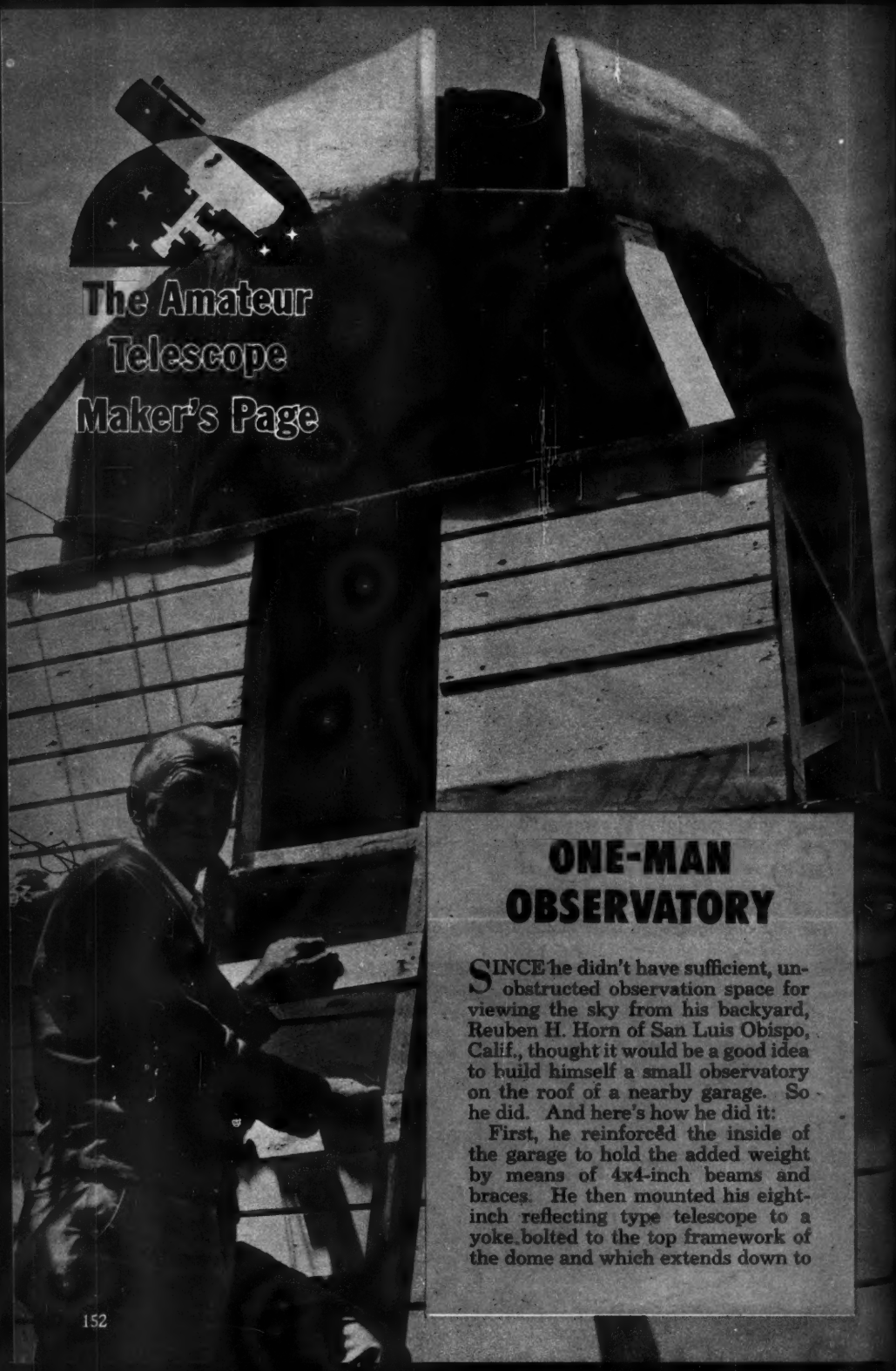
PHOTO TIPS

SPARE LENSES may be safely stored in old jewelry boxes. Most containers are large enough to hold the lens board, too.

ENLARGING PAPER envelope should be marked with large label to show grade of paper it contains; avoids costly mistakes.

BORDERLESS EASEL enables you to utilize full area of photo paper. Use plywood board, double-face masking tape in corner.

TITLES for transparencies can be made from "alphabet macaroni." Glue letters to black paper and photograph on copy stand. Develop film and mount in regular cardboard slide.



The Amateur Telescope Maker's Page

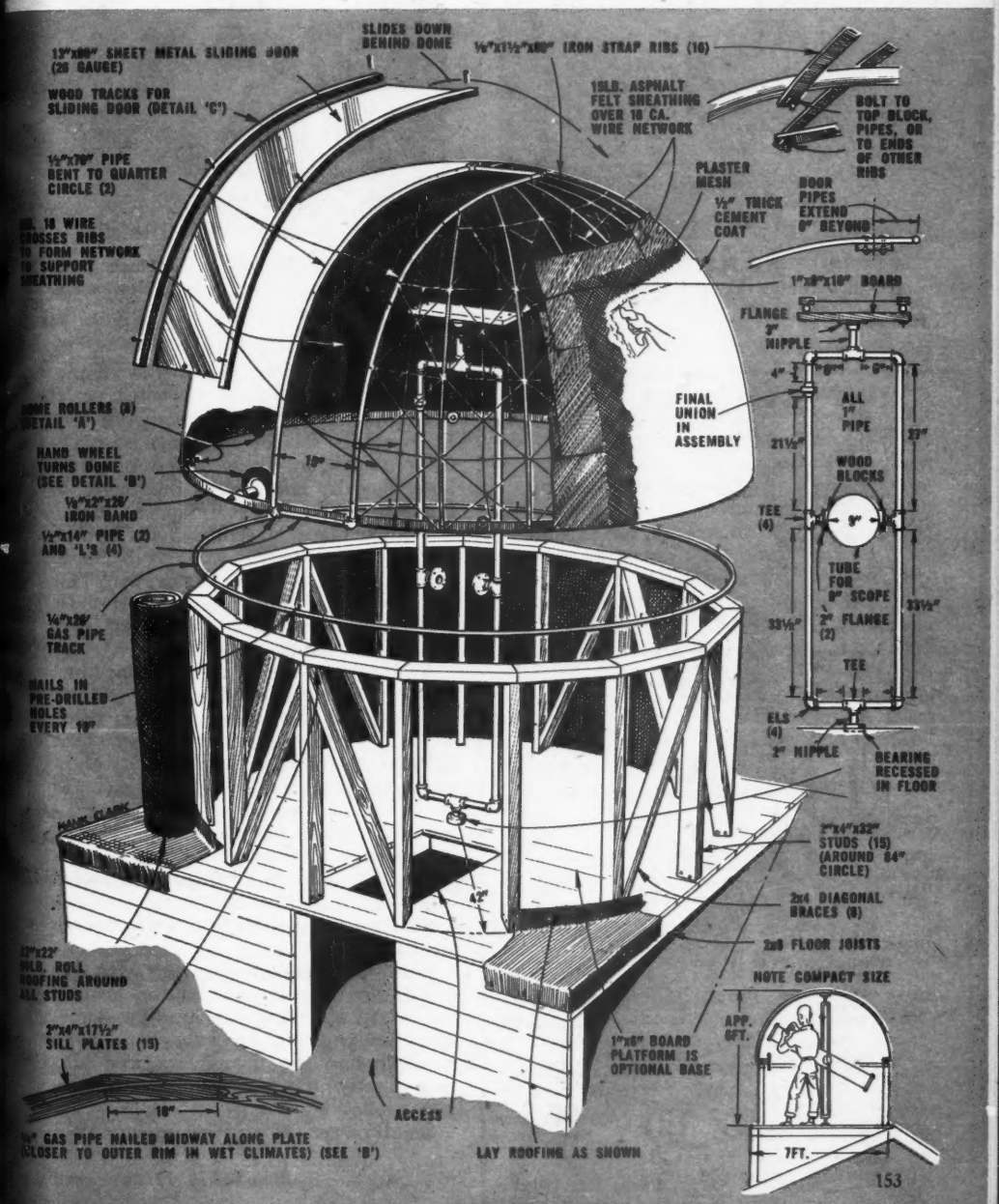
ONE-MAN OBSERVATORY

SINCE he didn't have sufficient, unobstructed observation space for viewing the sky from his backyard, Reuben H. Horn of San Luis Obispo, Calif., thought it would be a good idea to build himself a small observatory on the roof of a nearby garage. So he did. And here's how he did it:

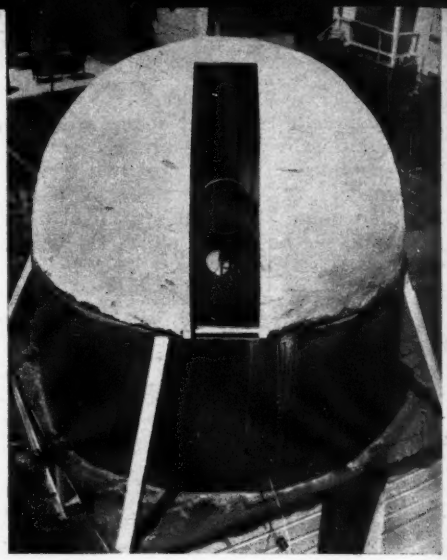
First, he reinforced the inside of the garage to hold the added weight by means of 4x4-inch beams and braces. He then mounted his eight-inch reflecting type telescope to a yoke bolted to the top framework of the dome and which extends down to

the center of the floor. There the yoke is mounted in a ball bearing, causing it to rotate with the dome when it is turned.

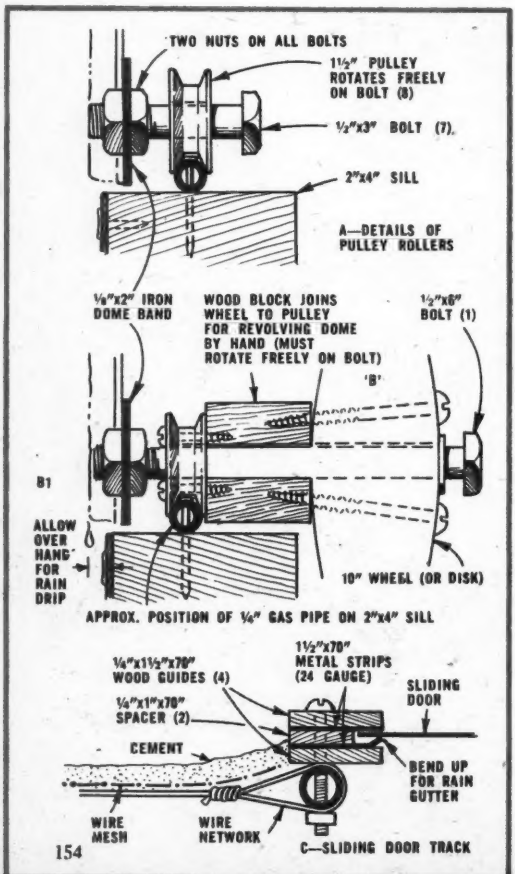
The dome section has an iron band around the bottom to which are bolted eight 1½-inch pulleys, evenly spaced. On one pulley bolt a 10-inch wheel is fastened. Turning this wheel by hand rotates the dome. The pulleys roll on a quarter-inch gas pipe that is bent in a circle and nailed to the top of the



PARTIALLY COMPLETED observatory showing 2x4 framework and skeleton for dome.



DOME is finished with a half-inch thick coat of cement. Telescope is a Newtonian.



framework which holds the dome.

The platform or floor was constructed by nailing 2x4's, spaced about one foot apart, on the reinforced garage roof. On this foundation were nailed one-inch floor boards, laid across the 2x4's, to make an eight-foot floor space.

With a piece of white chalk tied to the end of a piece of string, 42 inches long, an 84-inch circle was drawn. This circle was used as a sort of template, marking where the 2x4 uprights were placed and nailed.

The quarter-inch gas pipe was then nailed to the center of the framework, as shown in the drawing. This track should be centered on the 2x4's so that the dome will rotate easily on its eight pulleys.

Dome Construction

Two-inch steel or iron strips, ⅛-inch thick and shaped to a circle, were bolted together about 12 inches apart, bent to a quarter-circle and in turn fastened to the top plate.

After the dome framework was finished, No. 18 wire was wound around each strip, all the way around the dome, spaced about ten inches apart. This strengthened the framework and also helped make the paper under the metal lath lie flat.

Small pieces [*Continued on page* 191]

MI's Satellite Saucer

[*Continued from page* 118]

balk at times, it is recommended that the lower portion of the cowl be firmly cemented in place while cementing the upper part only lightly to facilitate engine checks or removal should trouble develop later on.

The fin and rudder assemblies as well as the soft balsa canopy are now cut, shaped and cemented in their respective positions. Fillet the forward portion of the fuselage at all points where it intersects the wing frame to insure a neater and sturdier job. Apply one to two coats of clear fuelproof dope to the entire structure, sanding smooth between each coat.

The model is covered in four main sections, the elevator portion being covered separately. A light grade of silkspan is recommended—or even tissue—if a small size engine is used. The advantage of silkspan over tissue is that it can be applied wet. This makes it much easier to achieve a neat, taut covering free of wrinkles. If a large engine is to be installed, then a heavier grade of silkspan should be used, or even lightweight silk or nylon.

When the covering has been applied and trimmed, brush or spray on at least three to four coats of clear, fuelproof dope, smooth-sanding gently between each coat.

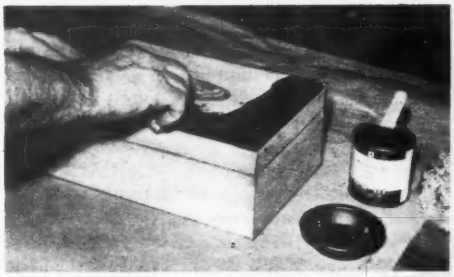
Colored trim and other realistic details can now be added to suit. These can be bizarre, realistic, amusing or whatever. Remember, however, that engine size will dictate the amount of trim the model can take without building up too much weight and thus impairing performance.

Unless you have had some experience in flying high performance combat or stunt models, it is a good idea to limit the saucer's control surface movement by the addition of some temporary stops. These will allow the model to handle quite easily during early testing. As experience familiarizes the operator with the model's behavior, the limit stops can be gradually opened up until complete surface movement is being employed.

Prior to every flight check your control lines for any kinks that may have developed and see that the tank has enough fuel. Then, with the wind at your back, rev 'er up and let 'er rip. •

Cigar Humidor

[*Continued from page* 122]



FILLER-STAIN is applied with a rag and rubbed off when it starts to become cloudy.

can be covered with cloth, paper, plastic, plastic laminate or a coated hardboard; it can even be given a paint or lacquer finish.

While other methods of construction may be followed, the one shown will result in a strong, yet neat box. The sides and ends are rabbeted for the top and bottom and joined at the mitered corners with splines. As is common practice with box construction, the sides, ends, top and bottom are all glued together, after which the lid is separated by sawing through the sides and ends. All finishing should be completed before the glass and tropical cedar lining is permanently installed.

Tropical cedar is available from Albert Constantine and Son, 2050 Eastchester Road, N. Y. 61, or from Craftsman's Wood Service Co., 2727 Mary St., Chicago 8, as are the ready-made inlays and finishing materials. When the lining has been shaped and fitted, remove it and proceed with the finishing of the box.

Since mahogany was used for the exterior of the box shown, it was necessary to fill the open grain. A paste filler-stain is best for this purpose. This is simply rubbed on with a rag, allowed to haze over and then rubbed off against the grain. The filler remains in the open grain and the wood is stained at the same time. Two or three coats of varnish, rubbed down with extra fine garnet paper between coats, produces a nice finish which is further enhanced by a coat of paste wax.

The blotters in the moistening device should be replaced at intervals so that the cigars will not pick up any undesirable odors. •

Roll-Away Train Table

[*Continued from page* 124]

is from the original hole toward the end of the frame.

Fasten the large fixed panel to the frame with ¼-inch carriage bolts. The sliding panel is also secured with ¼-inch bolts, but here use wing nuts that can be hand-tightened. With the 20-inch panel set in place you are ready to lay the track.

Assemble the tracks in an oval, allowing two straight tracks on each side to fit on center piece with their joints even with the panel's edge. Each track is fastened to the plywood with a few small wood screws.

To store simply fold up the large panels. A strap may be installed to keep panels from falling.

Model houses, stations, bridges or other accessories lying lower than the distance between folded panels can be fixed to the platform permanently.

The wiring may be temporary or permanent, depending on the number of accessories used.

The finished table stands about 16 inches off the floor—a perfect height for the junior engineer. •

FACE-ON VIEW shows method used to fasten the sliding panel to frame. Loosen wing nuts when disassembling train table for storage.

Shop Wall

[*Continued from page* 132]

quire the use of a small three-cornered star drill to chip out the anchor-plug holes.

You will find that a No. 10 Rawl drill with matching fiber-and-lead plugs using flathead wood screws 1½ inches long will anchor the furring strips securely. Keep turning the drill while hammering and blow out the concrete dust at frequent intervals.

Cut the furring strips to the height of the wall. If the wall is an outside one and subject to sweating, give one surface of the strips a coat of shellac. The strips should be spaced no less than 16 inches apart.

Using the Ramset, furring strips can be put up like any other woodwork. Hold them in position, drive the first nail at the top and then work down. If the star-drill and anchor-plug method is used the routine is slightly different. Drill the top hole in a strip for a mounting screw, place the strip against the wall and mark through the hole for the starting point of the star drill. Hammer out the hole, insert the plug, then screw on lightly. Now drill the other screw holes down the strip.

Aim the star drill through each hole to start, then withdraw the drill, push the strip out of the way and finish the hole. Continue to use the strip's holes as guides as the drill has a tendency to wander until its point breaks through the outer surface of the concrete. When all the holes are finished, tighten all screws into their anchors. Four No. 10 screws along an eight-foot furring strip will hold it firmly.

Don't make the mistake of screwing the pegboard directly to the furring strips or other wall supports. This will render useless all the holes passing over the furring strips, as the ends of the various tool hooks and brackets will no longer have clearance on the underside. A spacing of ⅜ inch is required. An easy way to accomplish this is to use scraps of ⅜"x1"x1" plywood nailed at 16-inch intervals to the center line of the furring strips.

When my wife inspected the finished wall she was delighted.

"Why, it's beautiful!" she exclaimed. "When will you do the other walls?"

There's no satisfying some women. •

Tape Storage Cabinet

[*Continued from page* 137]

drawers first and then construct a cabinet to go around them. Plan it on paper; you'll save lots of mistakes if you do.

Your first step will be to plan the tape storage drawer using a module of 7½ inches—the space required for a 7-inch reel box to fit easily.

You will want an occasional divider in the drawer to prevent the tapes from falling when a few of them are removed so plan the tape drawer as a series of 7½x7½-inch compartments, each of which will hold 11 tapes.

Two such rows of compartments—allowing for the drawer's sides and a middle partition—call for a drawer measuring 17¼ inches wide over-all.

The length of this drawer will be determined by the three 7½-inch compartments on each side of the center partition and by the two smaller compartments at the front of the drawer. The latter will hold 5-inch tape reels and measure 7½x5½ inches inside.

In addition to the tape compartments, allowance must be made for the ¼-inch plywood dividers and for the ends of the drawer. The drawer's false front is made separately and added later.

Both tape drawer and accessory drawer are constructed from ¾-inch stock grooved to receive a ¼-inch plywood bottom which is nailed to the center partition. Thus the sides and ends of the tape drawer are made from boards 4¾ inches wide, while the center partition is only 4 inches wide. Glue all joints, using nails or screws as well.

To insert the ¼-inch plywood dividers without dadoing, use metal clips called Zip Clips which are taped in place inside the drawer to accept the partitions that slip into the ready-made grooves they provide. These clips are available at most hardware stores.

The smaller top drawer holds accessory items and recorder lid. Before building this drawer, measure the recorder lid to be sure it will fit. Don't forget to consider the depth of the drawer and plan it accordingly, allowing an extra ¾ inch for the inset bottom.

In the event your recorder lid is more than the 15¾ inches inside measurement shown, simply make the drawer wide enough to fit. Then you can shim out the bottom drawer to the necessary width.

Having finished the two drawers you are ready to plan the cabinet itself. Vertical spacing of the drawers is important since the top drawer must clear the tape boxes in the bottom drawer. Again, plan it on paper.

The width of the cabinet is determined by the type of drawer slides you use—and be sure to use them or your tape drawer will be too difficult to open. Buy a set of 28-inch metal slides (the roller type used in filing cabinets) at your hardware or stationery supply house. Installation is usually a simple matter of attaching them with screws. Make sure the proposed width of the cabinet will allow space for the slides themselves. Most such slides require the inside width of the cabinet to be one inch greater than the over-all width of the drawer.

Since the drawer shown here is 17¼ inches wide over-all, the inside width of the cabinet must be 18¼ inches. Length of the cabinet should be an inch or two more than the over-all length of the drawer and, if you want to recess the front as shown in the pictures, add an additional two inches. Both top and bottom of this cabinet have the same dimensions.

The false front, which is attached to the front of the tape drawer with screws from the inside, is cut from 18⅛x15⅜x¾-inch stock. A standard drawer pull is used.

Sand all pieces before assembly, then fasten joints together with nails or screws and glue firmly.

A handy gimmick for insuring a square cabinet is to check the cabinet with a carpenter's square after the nails have been inserted and the glue applied; then nail a temporary diagonal cleat across each end. This will hold the cabinet "in square" until the glue sets.

The cabinet legs can be made from two 6-inch lengths of ½-inch gas pipe sawed in half, then shod in rubber or plastic crutch tips and screwed into flanges mounted on the bottom of the cabinet. If you anticipate moving the cabinet about, large, easy-rolling casters can be substituted for legs. •

Golden Hammer Awards

[*Continued from page* 139]

Jones, Normal, Ill. . . . Glenn Corbett, Kansas City, Mo. . . . Buddy Bourdeau, Waukegan, Ill. . . . Hap Record, Portland, Ore. . . . Wilbert Will, New Bremen, Ohio . . . Dr. Robert E. Haentze, Philadelphia, Pa. . . . Ronald B. Holm, Willmar, Minn. . . . Miller F. Galwith, Phoenix, Ariz. . . . Peter Rossi & John Rossi, Jr., Brooklyn, N. Y. . . . Bobby Whitehair, Terra Alta, W. Va. . . . S. E. Radcliff, Fort William, Ont., Can. . . . David Grippe, New York, N. Y. . . . H. R. Murdoch, Vancouver, B. C., Can. . . . Lt. Col. Charles R. Wainright, Fort Lee, Va. . . . Steve Bombalicki, Parma, Ohio . . . Alfred J. Ouilletto, Woonsocket, R. I. . . . Jerold Horn, Peoria, Ill. . . . V. B. Beverford, Youngstown, Ohio . . . Herbert Linden, Poland, Ohio . . . Lawrence R. Ralston, Chicago, Ill. . . . Robert W. Eastwood, Chester, Pa. . . . Wilbur Reeves, Hollywood, Fla. . . . John M. McGehee, Cedartown, Ga. . . . Ronald Wells, Norton, Va. . . . George F. Hall, Elkhart, Ind. . . . Edward Mrozek, Locust Valley, L. I., N. Y. . . . Don Bradley, Galesburg, Ill. . . . Donald L. Cornelissen, Mattoon, Ill. . . . H. R. Ostrom, Oakville, Ont., Can. . . . William Joress, Dorchester, Mass.

The following craftsmen have been awarded CERTIFICATES OF MERIT:

Takeo Omuro, Kahului, Maui, T. H. . . . W. R. Ingaham, Midland, Tex. . . . Mack H. Holcomb, Hialeah, Fla. . . . James Kaminski, Pittsburgh, Pa. . . . Roland K. Wendel, El Kader, Iowa . . . Ron Petitpas, Halifax, Nova Scotia . . . Bob Hellberg, Huntington Sta., L. I., N. Y. . . . Russell W. Kratz, Kingsville, Ont., Can. . . . Albert Carnes, Brooklyn, N. Y. . . . Harry J. Ducos, New Orleans, La. . . . James A. Upton, Glen Burnie, Md. . . . W. E. Hunt, Glenbrook, Conn. . . . Frank Braber, Villa Park, Ill. . . . R. Elson Chapman, Toronto, Ont., Can. . . . Vernetta Fairbairn, Topeka, Kan. . . . E. C. Van Graay, Johannesburg, S. Africa . . . Michael Kirschner, Vista, Calif. . . . Joseph Pomponio, East Newark, N. J. . . . Kenneth Maurer, Flint, Mich. . . . Don Johnson, Aurora, Nebr. . . . James E. Gross, Chicago, Ill. . . . Capt. Joseph Cohen, Albuquerque, N. M. . . . Bill & Don Woelfel, Blue Island, Ill. . . . Thomas H. Andrews, Hingham, Mass. . . . John Lesko, Clifton, N. J. . . . Danny Gilbert, Wooster, Ohio . . . John L. Walker, Chicago, Ill. . . . H. M. Dimond, Framingham, Mass. . . . Ernest R. Matthew, Lakewood, Ohio . . . Stanley Clark, East Bradenton, Fla. . . . Howard F. Camfleed, Canastota, N. Y. . . . J. R. Pardue, Olivette, Mo. . . . A. Pomponi, Stamford, Conn. . . . Kenneth Carver, Gorham, Me. . . . Charles Piekas, Lowell, Mass. . . . David Gardner, Lapeer, Mich. . . . Francis E. Schinsky, Affton, Mo. . . . Louis M. Marey, Babylon, N. Y. . . . Francis G. Nowak, Thorndike, Mass. . . . Harold Lanzer, Holgate, Ohio . . . J. L. Pedroni, Jr., Castro Valley, Ohio . . . Harley M. Vogel, New Ulm, Minn. . . . Tom Lowe, Macon, Ga. . . . Donald F. Hanson, Ellsworth, Kan. . . . Hal M. Campbell, Olney, Ill. . . . Charles E. Hitchens, Millbury, Ohio . . . Jerry Paeppelman, Yorkshire, Ohio . . . John Gilbert, Cobourg, Ont., Can. . . . Charles E. Dronhard, Massellon, Ohio . . . George V. Alterpeter, Toronto, Ont., Can. . . . Ray Layton, Muskegon, Mich. . . . Harry L. Vaughn, Honolulu, T. H. . . . Ernest Lawrence, Tucson, Ariz. . . . Guy Malambre, Baltimore, Md. . . . Fred Keck, Waverly, Ohio . . . Irving S. Zarb, Silver Spring, Md.

Watch for the names of more winners next month. •

Photography Today

[*Continued from page* 149]

and then driving him down to the rumpus room!

The new Longines-Wittnauer camera, Cine-Twin, really does take movies as well as show them. It has a number of rather interesting innovations besides being a combination camera-projector.

First of all, instead of a spring-wound motor for taking pictures, three size D flashlight batteries power the camera for what the manufacturer says is a full year of average filming.

In order to keep a check on the condition of the batteries, so as not to be embarrassed by a run-down in the middle of a scene, a tiny neon light built into the view finder glows when the batteries are up to snuff.

The camera, as you can see from the picture, is a turret model which accepts three taking lenses and one projection lens. The standard lens with which the camera is equipped is an f-2.5. In addition, two wide-angle lenses are available, an f-1.9 and an f-2.5. A 38mm telephoto lens, f-2.45, is also available. Complete with carrying case, standard lens and projection lens, it sells for $159.50.

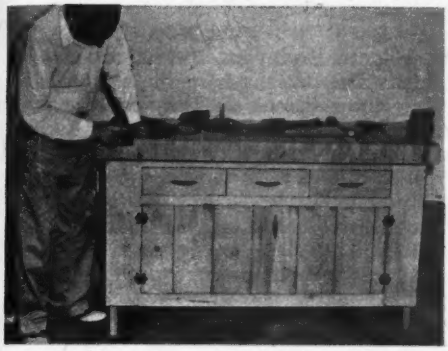
So far, when handling the camera end of the combination it seems recognizable for what it is. But when you are through with movie-making and your roll of film comes back from the processing lab, the intriguing dual nature of the critter comes into play. By removing the camera cover and placing the camera on a small power base it becomes a small and compact 8mm movie projector. A second shutter, especially designed for projection use, comes into play when the cord is plugged into an AC line. The combination movie projector now consists of an optical system with a 400-watt lamp, an f-1.6 projection lens and a motor powered by the house line. Conversion takes less than a minute.

—*Robert Brightman*

BUILD YOUR OWN TELESCOPE

If you can repair a leaking faucet, you can make a reflecting telescope. For a complete set of plans, photographs, and instructions that will show you how to construct MI's portable six-inch telescope, send $2.00 to MI Plan Service, Fawcett Place, Greenwich, Conn. Please ask for Plan No. P-6.

Need A Workbench?



Every one does! You can get the plans to build any one of these benches for 50c or all three for one dollar. The bench above measures 24x60 and is 36 in. high. Top is made of 2x4's placed on edge, bolted together. Plan No. F-4 .....50c

If you like lots of storage space, you'll want to build this roomy 12-drawer Masonite-topped workbench. It is 5 ft. long and 2 ft. wide. Plans include wall cabinets. Plan No. F-16 .....50c
Bench below (24x48 in.) was especially designed for the apartment dweller. When not in use it is a beautiful piece of furniture. Send remittance to MI Plans Service, Fawcett Publications, Greenwich, Conn. Plan No. F-2 .....50c

A national woodworking contest is being sponsored by Albert Constantine and Son, 2050 Eastchester Rd., N. Y. 61. There are three categories: veneer projects, lumber projects and combination lumber and plywood. Winners will be judged from photographs. Write to the company for an entry blank and further information. The contest closes March 31, 1958.

The Lehman Mfg. Co., 972 Broad St., Newark 2, N. J., announces a marine conversion kit for Chevrolet V8 engines. This is in addition to their conversions for engines built by the Ford Motor Co.

A free booklet, "Shellac, How To Use It," is available from the Shellac Information Bureau, 51 Pine St., N. Y. 5.

Du Pont has introduced a new line of home hardware which is made of Zytel, a nylon resin. Door latches, knobs and lock sets molded in futuristic designs will not chip, peel, fade or corrode and are extremely tough with high resistance to extremes in temperature.

The General Electric Co., Syracuse, N. Y., announces publication of the second edition of their "Transistor Manual," a 112-page booklet containing information on transistors and their use in electronic circuits. Priced at 50 cents, it may be obtained from local transistor and tube dealers or by addressing the company, Section PRR, Semiconductor Products Dept.

A new, fast film, Kodak Royal-X Pan, is now on the market. Rated with an ASA exposure index of 650, it may be assigned a rating of 1600 for use in photo-journalism and industrial photography. It comes in 620 and 120 roll film sizes.

You can have your tape recordings pressed into records by Crest Records, 220 Huntington Station, N. Y. A rate card is available free from the company.

Make 'Em with MI

PLANS

Build these projects with the simple, easy-to-follow Mechanix Illustrated Plans. All are complete with drawings, detailed instructions and specifications.

MODEL PLANS

SKYHOPPER Plan No. 363 $ .25 ☐
This 30-in., Class C rubber-powered job really lives up to its name. Can be built in a weekend for less than one dollar.

SPITFIRE Plan No. 419 $ .50 ☐
A 28-in. control-line model of the famous R.A.F. fighter plane. Can be powered with .19 to .35 engines. Simple to construct.

BOUNCIE II Plan No. 388 $ .50 ☐
When over 6,000 enthusiasts have built a model, you know there's something to it! This 30-in. runabout model will use any .19 to .65 engine, and will feel at home on your mantelpiece or in water.

ELECTRA II Plan No. 403 $ .50 ☐
A snappy cruiser model made of white pine and balsa, 32-in. Electra will run on a lantern battery or .19 to .60 engines.

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No rails are required for this 10-in. reproduction of a slick engine. Operates on two flashlight batteries.

CHEVROLET Plan No. 407 $ .25 ☐
Patterned after the Styline sedan, this is one of the most popular MI models. It's 10½ in. long, powered by a miniature electric motor.

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Very simply constructed 13-ft. flat-bottom plywood rowboat, Beam: 4½ ft. Weight: 140 lbs. Can be rowed or used with a small outboard.

LI'L PUTT Plan No. B-170 $1.00 ☐
Built from plywood and fir, this 8½-ft. outboard speedster will do over 30 mph with a 10-hp motor and about 18 mph with 3½ hp.

SCUD Plan No. B-185 $2.50 ☐
Comfortable 14-ft. outboard runabout does 30 mph with a 22-hp motor. Weight: 250 lbs. Constructed of exterior-grade plywood.

SANDPIPER Plan No. B-184 $4.00 ☐
This attractive and unusual little auxiliary schooner is 24 ft. long and sleeps two people. Draft: 3 ft. Sail Area: 316 sq. ft. Conventional planking.

ISHKOODAH Plan No. B-190 $3.00 ☐
Modern express cruiser with accommodations for two. Length: 25 ft. Speed: 25 mph. The V-bottom hull is conventionally planked.

MISCELLANEOUS PLANS

PORTABLE TELESCOPE Plan No. P-6 $2.00 ☐
These easy-to-follow plans will show you how to build a superb 200-power instrument for less than 30 dollars!

TRAILER FOR TWO Plan No. HJ-12 $2.00 ☐
Easily built and no trouble to tow, this 10-ft. streamlined home on wheels contains complete cooking facilities. Ideal for hunting and fishing trips.

UTILITY WORKBENCH Plan No. HJ-13 $ .50 ☐
Ordinary lumber and common hand tools will suffice to construct this basic shop item. Plans are to scale, with complete instructions.

35mm ENLARGER Plan No. P-4 $ .50 ☐
A miniature camera is used in the construction of this enlarger. Instructions are complete with detailed drawings.

CONTACT PRINTER Plan No. P-1 $ .50 ☐
Takes up to postcard size as well as 4x5-in. negatives. Full-size plans may be used as templates.

SLIDE PRINTER Plan No. P-5 $1.00 ☐
At last—an inexpensive device which enables you to project those 35mm or bantam negatives to nearly life-size proportions.

PARALLEL ARM ENLARGER Plan No. P-2 $1.00 ☐
Accepts negatives from 35mm to 4x5 in., and can be built around an Argus, Leica, 4x5 Graphic, or similar cameras.

Send remittance for each plan checked to Mechanix Illustrated Plan Service, Fawcett Publications, 12 Fawcett Place, Greenwich, Conn.

Yes, They Dope Athletes

[*Continued from page* 61]

college football players, then high school athletes. Besides the immediate physical damage the pills can do, they could even lead to more serious drug addiction. A kid who starts on amphetamine pills in high school or college may wind up on cocaine, morphine or heroin.

The doctors took a very serious view of the situation and promptly voted a thorough investigation into the practice.

The immediate reaction from coaches, athletes and sports officials was a thunderous denial. Not only had they personally never used stimulants but they'd never heard of anyone who did.

The uproar became so loud that it drowned out the doctors. Dan Ferris of the Amateur Athletic Union claimed he'd never heard of pep pills being used by milers and, anyway, the A.A.U. had a rule against them. Walt Byers, head of the National Collegiate Association, said he knew of no instance of the use of pep pills. National Football League Commissioner Bert Bell declared: "I never even heard of their use in athletics." Cus D'Amato, manager of heavyweight champ Floyd Patterson, dismissed the matter with the statement: "The whole thing is ridiculous."

Behind all the indignant noise remained the cold, undeniable facts. The United States Olympic Association had been investigating the practice for years and its legal counselor, John T. McGovern, had reported a year ago that he had been in touch with executives of Olympic, university and amateur athletic organizations as well as with doctors, athletic directors and others.

"I was told," he said, "that substantially the entire population in schools and colleges have been using this type of drug."

Statements from athletes substantiate McGovern's claim, although coaches continue to deny the facts.

One of Australia's Olympic swimming stars declared: "Some of our swimmers fearlessly admit that they take pep pills to help them shatter records."

A famous professional football player, formerly of the San Francisco 49'ers and now playing in the Canadian league, admitted that he and other players took the "bennies." Said he, "I played through

all of the games and didn't feel tired."

A reputable doctor, retained by a Canadian football team, wasn't afraid to talk frankly either. All Canadian football clubs used the amphetamine drugs, he said, and most of the American players on Canadian teams picked up the habit while they were playing in college in the United States.

In the face of these admissions the earlier denials by sports officials look ridiculous if not downright evasive.

Pep pills, admittedly, aren't the only things being used. At a meeting of Vienna's Physicians' Associations last March, Ludwig Prokop of the Academy of Sports and Physical Culture in Vienna told the assembled doctors that the use of drugs such as morphine and cocaine has become a routine procedure among European soccer players, water polo players, long distance runners and cyclists. This is especially true, he said, among cyclists competing in the gruelling Tour de France. These drugs, he said, may raise muscle power and endurance temporarily but they lead to addiction and physical and psychological ruin.

The amphetamine drugs, also widely used in Europe, postpone the sensation of fatigue and, for a short time, boost the ability to concentrate. But, held the Viennese expert, they wear down the body because the fatigue is there whether it is felt or not and continued use of these drugs may result in a breakdown of coordination.

These, as well as other drugs, declared Prokop, have invaded the realm of sports and their use has become common practice. The reason can be found in the statement of a school football coach.

"I never got a raise or even praise for teaching a football squad to be good losers," the coach told me. "They want me to produce a winning team because winners bring the school bigger enrollments and bigger contributions from happy alumni."

The main reason for the widespread use of Benzedrine pills is the fact that coaches and athletes believe they improve performance. In many cases they do—but mainly by masking fatigue. The athlete doesn't feel tired and can thus make abnormal demands upon his body. But the fatigue—the wear and tear—is there even if he doesn't feel it. As a result, there is a terrible let-down afterward.

Do pep pills constitute doping?

As one doctor has said, "Let's put it this way. If a trainer gave a race horse an equivalent stimulant, he would certainly be risking a jail sentence. Then why shouldn't a human athlete have the same protection?"

One way or another, it's a good bet that the present investigations by the American Medical Association and the American College of Sports Medicine will shock many of us out of our sports-happy complacency and remove the thick layer of whitewash that has been poured over the "pep pill" scandal. •

All About Pipes

[*Continued from page* 69]

Here are some of the nice things pipe smokers think about, according to the Kaywoodie people, America's busiest pipe makers.

Briar. The briar pipe, now popular for over a century, is made of the burl of a shrub that grows in countries lapped by the Mediterranean. A nice burl takes up to 250 years to form. It's a big knot at ground level, between roots and stem. Only a little part of it makes nicely grained pipes requiring no pit and crack filler. A conscientious briar man rubs his briar against his nose to polish it. He breaks it in carefully, filling it only half full at first until a thin carbon forms inside. He does *not* let this get very thick but reams out the bowl now and then.

Corncob. Good old honest American cob! Beloved of Huck Finn and General MacArthur! Corncob men claim the corncob is pipe smoking without affectation and that the corncob has the virtues owners of $100 straight-grains claim for their pipes. Sweet and light. But a corncob does not improve with age—it gets worse. You smoke it a while, then invest two bits for a new one.

Clay. Landlord, fill the flowing bowl, bring me slippers, a yard of clay and let's talk of ghosts and huntin'. Besides all this, the long clay really is cool because you're so far from the burning leaf. It breaks easily. The Dutch village of Gouw makes fine clays even today. They sell for around 30 cents in American tobacco shops. Try one for the hell of it. Mr. Pickwick, I presume?

Meerschaum. Once believed to be solidified prehistoric seafoam from which it gets its German name. Really compacted shells of microscopic animals that died millions of years ago. They dig down about 250 feet in red clay deposits in Asia Minor to get it. It is the prime test of a pipe man to color a meerschaum nicely. This is done by smoking it slowly, never letting damp fingers touch the warm bowl, never smoking it outdoors where changing temperature may affect it. One style now associated with the late Sherlock Holmes of Baker Street, London, is the calabash. The calabash is an African gourd that can be grown into useful shapes. Calabash pipes are usually lined with meerschaum.

Carved and novelty. German peasant pipes, elaborate meerschaums covered with vine leaves and sporting nymphs, bone pipes from the Orient, stone pipes once used by American Indians, Dutch glazed picture pipes, cherrywood pipes with the bark left on.

Tobacco. Latakia, Black Cavendish, Perique, Bright Leaf, Dark Burley, Yenidje—a score of tobaccos from romantic places. For less than a steady cigarette smoker spends on his undistinguished coffin nails, a man can experiment endlessly to find his own blend about which he can be very stuffy—and happy.

Women? There are only a few women pipe smokers in the U.S. today—about 150,000 against 17,000,000 men. But slower, cooler-burning pipes don't release the volatile oils the medics are warning us about. There will probably be more pipe smokers of both sexes shortly.

Rules. When you buy a pipe, look for lightness, balance—unless you want a big German one to hold in your lap. The bit—will you be able to hold it in your teeth? For shape, grain, etc., you're the boss. Never knock your pipe against a hard surface—use your hand. (Then wipe your hand on your clothes.) The shank hole should enter the bowl as low as possible for a good draw. Consider how the shape and size go with your shape and size—particularly as to your face. A pipe *can* make you look silly. Clean your pipe regularly, smoke it one day a week (that means six other pipes). Never wash it. Pipe sweetener, sold at tobacco shops, will prevent sourness if used as directed. Have fun—that's what smoking is. •

—*Harvey Gardner*

Hunting And Fishing

[*Continued from page* 80]

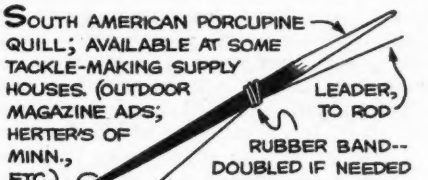
reels, lines, guns, decoys, boats and clothes. But none of us really has all he *needs.* Every last one of us lacks some important items.

Over the years I have built up a list of the things most of us put off buying, spending our money on fancy gadgets that catch the eye rather than buying the things we really need. And the strange thing is that few of these items cost more than $5 or $10. Not one hunter or fisherman in ten will have half of the items on my list, yet every one of them would greatly add to his pleasure and some to his personal safety. Every sportsman will welcome a gift chosen from this list. It should simplify your Christmas shopping for outdoor men.

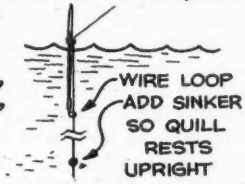
SPORTS TIPS

BY HAL SHARP

MAKING SENSITIVE BOBBERS



THIS EXTRA-SENSITIVE QUILL FLOAT--7" TO 9" LONG--IS INVALUABLE WHEN FISHING WITH BAIT FOR SHYEST BITING FISH (CRAPPIE, YELLOW PERCH, ETC). TOP RIG IS SIMPLEST. 2ND RIG'S WIRE LOOP--IN PLACE OF KNOTTED LINE, FIXED WITH TAPE, OR WINDING, IS BEST.



First on my list is a good compass. You'd think every sportsman venturing into a big woods or strange territory would have a good compass. Yet a survey I made just last year revealed that only four in a camp of 126 hunters in a big, wild woods had a good compass. Some had cheap devices that could only be classed as toys but most had no compass at all. A good, reliable compass with complete instructions for using costs less than $10. I prefer the type used by our paratroopers during the last war.

A highly essential tool for the fisherman is a simple, inexpensive pair of cutting pliers. I was guilty of not having a pair for several years. This oversight cost me much pain one afternoon when I attempted to extract a large plug from the mouth of a powerful northern pike. The fish gave a sudden lunge and one of the treble hooks sank deep into the flesh on the back of my left hand. The pike was still on another hook on the lure and his thrashing around was about as painful a thing as I have experienced.

It seems incredible that none of us in the boat had a pair of cutting pliers with which to snip the hooks off the plug. We did have a file. Believe me, filing proved a slow and excruciating job. When I finally got to the doctor's office, I was sick with pain. A $4 pair of cutting pliers would have saved me much of the anguish. These pliers are also useful in many other ways and make a fine gift.

Anglers' scissors make a wonderful present to anyone who ties his own leaders and flies. A fine pair with an English steel, serrated blade that will hold stiff nylon and cut clean should cost no more than $2.

No angler ever has enough swivels, and most of us get caught on a lake or stream without one just when we need it the most. A box of three dozen swivels in assorted sizes makes a top drawer gift any time and costs less than $4.

A real fishing knife is one of the most thoughtful gifts you can give. I don't mean a gadget knife with a dozen different tools on it. I refer to a real tough knife with only one cutting blade of fine steel and one blade made for extracting hooks and scaling fish. These cost $5 to $10 and are worth it. Yet a high percentage of anglers are without one. With the knife should go a good sharpening stone. Nothing is worse than trying to clean fish or cut bait with a dull knife. A good whetstone costs about $1.25.

How many times have I seen anglers trying to fix a jammed or broken reel without proper tools? A precision screwdriver set with various sized blades that fit reel screws is a welcome gift. Sets sell for $1.50 and no angler should be without one.

A lure saver always makes a good gift and few anglers have one. The kind to buy has dangling chains and is made so it will slide down the line to the snagged lure, engage the hooks with the chains and enable the angler to pull in the lure that might be lost otherwise. These cost less than $2, yet one may save the day for your angler when he snags the only lure the fish are hitting.

If your sportsman likes to eat fish, just remember that all fish taste better when cooked with the skin off. A fish skinner will make a very happy gift. He'll find it easier to skin a fish than scale it. Sells for around $6.

Car-top rod carriers are sure to win the thanks of any fisherman who travels frequently and doesn't want to take down his rod every time he moves. They fasten on top of the car and sell for $2.

A barometer is a boon to all anglers. High pressure or low makes a difference in whether you fish shallow or deep. A good barometer sells for $5 but you can go as high as you like on this item.

Does he fish with worms, crickets, grasshoppers or nymphs? Then a modern bait canteen that keeps these baits lively and healthy will delight him. They are inexpensive and very, very welcome gifts.

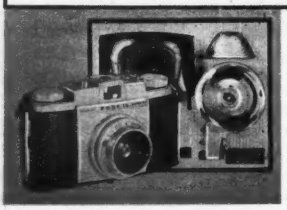
If he's a minnow fisherman, one of the new minnow buckets that keeps plenty of oxygen in the water will keep his bait alive for hours.

If you are planning a gift for a fisherman just getting started and you have a rod, reel or line in mind, get the best you can afford. Good ones are cheaper in the long run and make unforgettable gifts. For the beginner, I suggest a glass fly rod or spinning rod in the $35 class, a reel costing from $10 to $25. Your local sporting goods dealer will be glad to be of help.

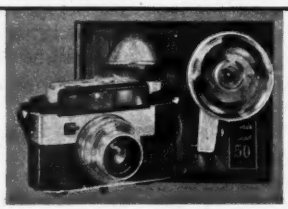
If your sportsman is an ardent hunter, I can think of no more welcome gift than

[*Continued on page* 168]

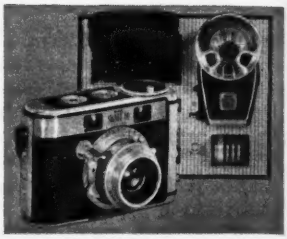
TO TAKE AND SHOW COLOR SLIDES BIG AS LIFE . . .



New Kodak Pony IV Camera features simplified exposure settings. zone focusing. Complete with camera, flasholder, case, slide viewer. Kodak Pony IV Camera Outfit, $58.40 (Camera alone, $39.95)



Built-in meter tells exactly how to set camera for just-right exposures! Kodak Signet 50 Camera with two-reflector flasholder, $82.50 (Kodak Signet 30 Camera, same basic camera without meter, $55)

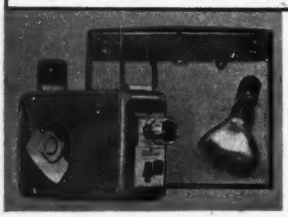


Kodak Signet 40 Camera in luxury gift outfit includes case, Kodak Rotary Flasholder, battery, Kodak Filter Kit. Kodak Signet 40 De-Luxe Outfit, $96 (Camera and Super-M 40 Flasholder, $74)

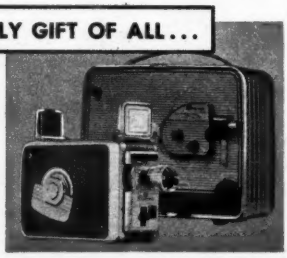
Christmas Gifts from Kodak

When you open a Kodak Camera Outfit first, you can save all the fun of Christmas—and years to come—in pictures

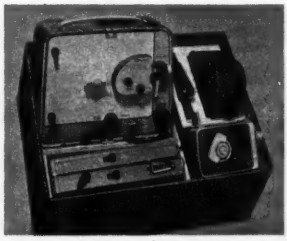
8mm MOVIES—FINEST FAMILY GIFT OF ALL . . .



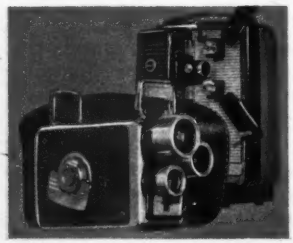
Brownie Movie Camera *f*/2.7 takes color movies with snapshot ease. Complete with Brownie 2-Lamp Movie Light and flood lamps for indoor use. Brownie Movie Camera Kit, *f*/2.7, $38.40 (Camera, $29.95)



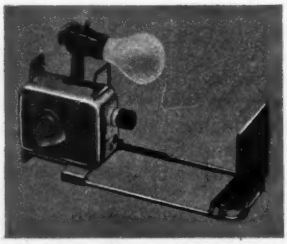
Complete movie outfit—Brownie Movie Camera, *f*/2.3; Brownie 300 Movie Projector shows movies 3 feet wide. Brownie 300 Movie Outfit complete, $104.70 (Camera, $39.75. Projector, $64.95)



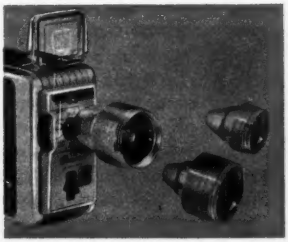
Take and show movies up to *4 feet wide!* Brownie Movie Camera *f*/1.9, case, 4-lamp light bar, Brownie 500 Movie Projector. Brownie 500 Movie Outfit complete, $144.95 (Camera alone, $49.75)



Brownie Movie Camera, Turret *f*/1.9 takes normal, wide-angle, telephoto movies; Cine-Kodak Showtime 8 Projector shows 8mm movies extra bright. Kodak Super 8 Movie Outfit, $214 (Camera, $84.75)

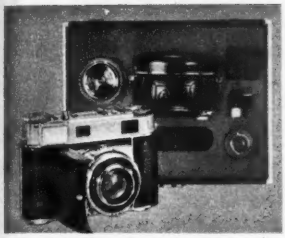


Titles and close-ups are easy with this titler for Brownie Movie Cameras. Includes camera platform, close-up lens, light bar, easel, title cards, "special effect" masks. Brownie Movie Titler Outfit, $15.95

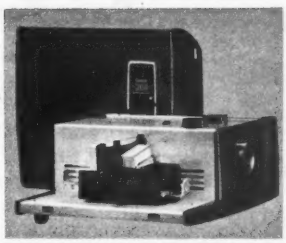


Take panoramic wide-angle or close-up telephoto views with your single-lens Brownie Movie Camera. Converters slip over regular lens. Kodak Wide-Angle and Telephoto Converters, $18.50 each.

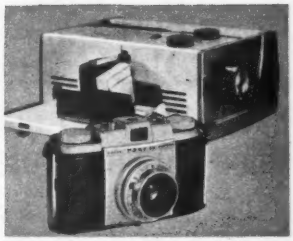
EASTMAN KODAK COMPANY, Rochester 4, N.Y.



Kodak Retina Camera outfits include telephoto and wide-angle lens components, case, carry-all bag. Kodak Retina IIIC Camera Outfit, $394 (Camera, $175). Kodak Retina IIC Outfit, $351 (Camera, $132)



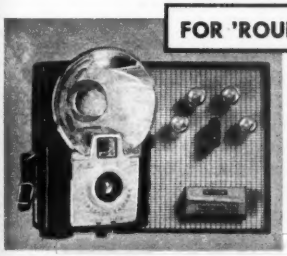
Kodak 300 Projector is ultra-portable, shows color slides big and bright. Quiet; cool; has finger-tip controls. Kodak 300 Projector with Readymatic Changer, $64.50 (with Magazine Changer, $74.50)



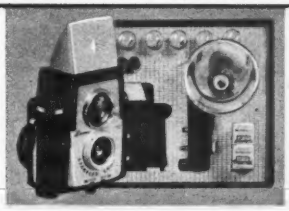
Complete color-slide outfit. Includes Kodak Pony IV Camera, Kodak 300 Projector. Kodak Pony Color-Slide Outfit, $104.50 (Kodak Signet 40 Color-Slide Outfit with same projector, $138.50)

say *Open me first!*

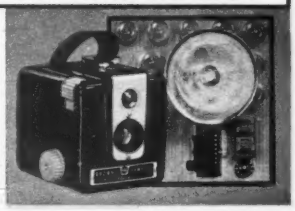
FOR 'ROUND-THE-CLOCK SNAPS IN BLACK-AND-WHITE OR COLOR...



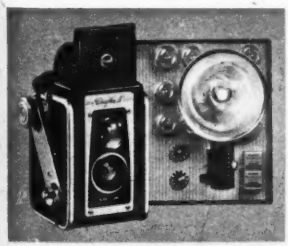
Brownie Starflash Camera takes color slides, black-and-white and color snaps. Built-in flasholder. Complete with bulbs, batteries, film. Brownie Starflash Outfit, $9.95 (Camera alone, $8.95)



Brownie Starflex Camera "previews" your shot, takes color slides and snapshots. Complete with camera, flasholder, batteries, film. Brownie Starflex Outfit, $16.50 (Camera alone, $10.75)



World's most popular snapshot camera in a gift outfit complete with Brownie Hawkeye Camera, flasholder, batteries, bulbs, film. Brownie Hawkeye Flash Outfit, $15.25 (Camera alone, $7.95)



Preview-finder of Kodak Duaflex IV Camera shows picture *big!* Complete with camera, flasholder, batteries, bulbs, film. Kodak Duaflex IV Flash Outfit, $25.25 (De-Luxe Flash Outfit, $38.75)

New Kodak Rotary Flasholder permits you to shoot six flashbulbs without reloading. Two models to fit most cameras. Kodak Rotary Flasholders, from $10.95 (Batteries not included.)

Kodak Photo-Hobby Outfits for developing negatives, printing snapshots at home. From $10.75

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How Weldwood Old Craftsman Pine Plywood makes your woodworking projects easier

New, all-pine plywood gives you all the working advantages of *clear* pine lumber, *plus* the added strength of rugged plywood construction, and convenience of large panel sizes.

Old Craftsman pine is carefully selected, precision manufactured, and backed by the Weldwood name. Sizes and types to fit your needs. Clean working, smooth sanding, easy finishing, no waste. Try it on your next project. Ask your Weldwood lumber dealer.

SEND THE COUPON for Old Craftsman book. Step-by-step directions are a cinch to follow. A 50¢ value—only 25¢ with coupon below.

PROJECT #9 from the Old Craftsman book (see coupon) —*Early American Hutch* with planter bin in dry-sink. Make it with Old Craftsman Pine Plywood. Stain with Clear Firzite® plus colors-in-oil, and finish with non-yellowing Satinlac®. You can paint Old Craftsman, too, and get beautiful results. Far less face checking and hairline cracking than with ordinary plywood.

SEND FOR PINE PROJECTS BOOK TODAY!

United States Plywood Corporation
Box 61, New York 46, N. Y. MI-12-57

Please send me my copy of your 96-page book, "Projects You Can Build With Weldwood Old Craftsman Pine Plywood." I enclose 25¢.

Name.....

Address.....

City.....**State**.....

Can Your Tires Take It?

[*Continued from page* 145]

a new tire with built-in balance. A thin strip of dense rubber running completely around the tire at the lining does this special trick.

Tests show that the faster you drive the more it pays to use larger size tires. For example a 7.50x14 tire that would be entirely practical on a car traveling around 60 mph would have only 67 per cent of the staying power of an 8.00x14 tire on this same car if driven around 80 mph or over.

Many of the stories you hear about the trouble people have with tubeless tires are unfair to this tire development. Goodyear engineers dug into this and came up with the discovery that tubeless tires are doing much better than their predecessors. Based on an experience of 20 million miles of driving, it was found that there were 55 road delays per million miles with tubeless tires as against 190 failures for tires with tubes.

Whether to use products of the smaller rubber companies or to stick to products of the giants puzzles many a tire buyer. Here I like to record the comment of a very experienced dealer for several well-known brands. "Mister," he observed, "if the little companies didn't make a good tire how do you think they could stay in business?"

Perhaps a few "don'ts" would be helpful when shoeing the car.

Don't buy a tire that squeals on curves. Tire designers have licked this annoyance with special tread design.

Don't use a tire size smaller than original equipment.

Don't assume that because a tire has whitewalls it is a premium or a better tire.

Don't overload the tires. In selecting new rubber for the car remember that a 7.60x15 tire is overloaded if it is carrying more than 1090 pounds per wheel. An 8.00x15 is overloaded at about 1160 pounds. This covers 4-ply tires at 24 pounds pressure.

Don't plan to go over 30 pounds pressure with the tires you select.

Most important of all don't fail to cultivate the acquaintance of a reliable tire dealer who understands your needs. It's the same rule that works best in buying a good used car. •

Is your car "smoking behind your back"?

Then see your

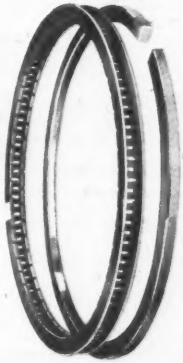
DOCTOR OF MOTORS

Blue smoke usually means trouble—engine wear that's taking its toll in lost power, performance—wasted oil, fuel and money! What to do? See your Doctor of Motors—your skilled mechanic—the man who knows how to restore engine efficiency and that "New Car Feel."

Doctors of Motors everywhere install Perfect Circle 2-in-1 Chrome piston rings to assure top performance.

Perfect Circles are plated with thick, solid chrome that resists wear—*more than doubles* the life of cylinders, pistons and rings.

For long life and responsive power with positive oil control, ask your mechanic to install Perfect Circle piston rings! Perfect Circle Corporation, Hagerstown, Indiana; The Perfect Circle Co., Ltd., 888 Don Mills Road, Don Mills, Ont.



You'll be surprised how quickly and economically your dependable Doctor of Motors can bring back a "New Car Feel" to your car. See him now!

PERFECT CIRCLE

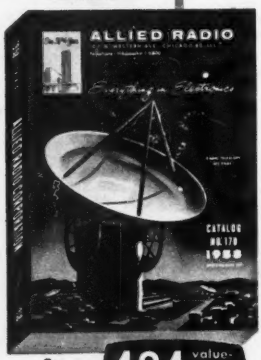
2-IN-1 CHROME PISTON RINGS

restore that New Car Feel

see the amazing new
EASY-TO-BUILD ELECTRONIC
ALLIED knight-kits
in ALLIED'S 1958
ELECTRONIC SUPPLY CATALOG

FREE!

BUILD YOUR OWN!
SAVE MONEY—HAVE FUN



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Hunting And Fishing

[*Continued from page* 163]

a good pair of hunting mitts having a split palm so he can use his fingers in an instant for shooting. These are warm, comfortable, good looking and sell for about $5.

A cold weather hunting cap with fur or Fiberglas ear flaps makes a useful gift for any North Country hunter. Red is a safe color to choose. They sell for $5.

I'll never forget the first pair of hand warmers I owned. They were a present and every time I used them I was grateful to the friend who gave them to me. They warmed my hands and body countless times on bitter cold days in the woods. A pair sells for about $4.

If your favorite hunter goes afield without yellow lens shooting glasses to protect his eyes, give him a good pair by all means. Besides protecting the eyes from powder burns, they give clearer vision and make shooting easier. These range in price from $13.50 to $30.

Does he take pride in his guns? Then a box of silicone gun wipers will bring a real smile to his face on Christmas morning. They come 12 for $8.50. The silicone works into the pores of the metal and gives long protection and "new gun" beauty. There is no finer protective coating for metal gun parts, say the manufacturers.

If he is a wildfowl hunter, a swivel seat shell box for boat or blind will add greatly to his shooting pleasure. Sells for under $10. One of the handiest gifts imaginable.

Portable blinds that are easily and quickly set up on lake and river shores are just what many a hunter is dreaming of owning. Cost anywhere from $5 to $20.

For the more expensive gifts, a gun cabinet or good scope for his rifle strike me as ideal. Either one should not cost more than $60.

There are many items on this list your favorite hunter or fisherman needs and probably doesn't have. And there is no better way to show your friendship or love than by giving one of these Christmas gifts that is certain to give him many hours of pleasure. •

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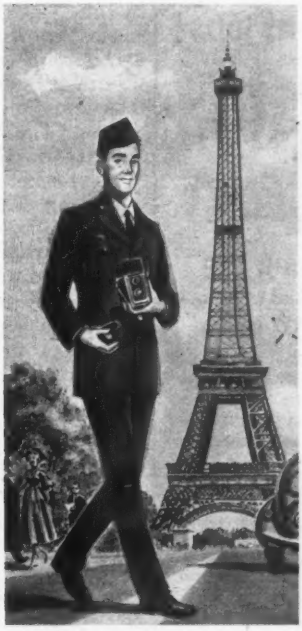
"CHOOSE YOUR TRAINING—I DID!

"I found only the Army guarantees high school graduates their exact job training. There's a course for every need, and it's reserved for you before you enlist, so you're sure to get the training you want. I picked Diesel Mechanics. It was a great course that I could never have afforded otherwise. Your Army Recruiter can show you how to get the training *you* want, too."

Victor R. Jones

• Pvt. Victor R. Jones, Miller, Ohio.



"CHOOSE YOUR TRAVEL—I DID!

"I wanted to see Europe, and I found only the Army lets you choose your own foreign travel. I picked my exact overseas assignment, and it was even guaranteed before I enlisted. What's more, I enlisted with my brother and we'll stay together all the time we're overseas. You and your buddies can plan your foreign travel just like I did. Your Army Recruiter can show you how."

Charles R. Carrico

• Pvt. Charles R. Carrico, Springfield, Ky.

"CHOOSE YOUR BRANCH—I DID!

"I'm serving the way I wanted to, because I found the Army would let me pick the branch that interested me most. I chose Anti-Aircraft, and I'm getting top leadership training in electronics and guided missiles—a really important field of the future. You can pick the Army branch you like the best, too. Just name it and it's yours—guaranteed before you enlist."

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• Pvt. John D. Finley, Colebrook, N. H.

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3 New BLACK & DECKER POWER KITS ring the bell in a raft of jobs!

- **Powerful B&D U-3 1/4" Drill**
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Jig Saw-Drill Power Kit teams B&D Jig Saw Attachment with U-3 Drill. Makes bookends, toys, repairs.

Sander-Drill Power Kit pairs B&D Orbital Sanding Attachment with U-3 Drill. Refinishes built-ins, furniture, antiques.

Saw-Drill Power Kit combines B&D Saw Attachment (world's safest) with U-3 Drill. Makes book shelves, furniture, toys.

Black & Decker Tools are priced to fit your budget! Kits from $39.95—Tools from $29.95—Attachments from $10.45. *The Black & Decker Mfg. Co., Dept. R127, Towson 4, Md. (In Canada: P.O. Box 278, Brockville, Ont.)*

Look under "Tools-Electric"

Black & Decker®

World's Largest Maker of Electric Tools

The '58 Ford

[*Continued from page* 89]

get to the test of the regular Ford.

Like Chevrolet, Ford has all the accessories known to mankind including air suspension, air conditioning and a Good Conduct Badge from Walter Reuther. Ford has more models than Kellogg has cornflakes. The '58 line runs from the Fairlane 500 to the Custom 300 and down to the Trashbasket Sifter's Special known as the Custom. There is also a plain Fairlane. In addition, Ford has a barnyard-full of station wagons including the nine-passenger Country Squire, the Del Rio and the Ranch Wagon. One can't help but wonder if Ford made *a* station wagon, *a* four-door sedan, *a* two-door sedan and *a* convertible, period—as they did in the old days—whether they couldn't rack almost a thousand bucks off the price. Oh, well. . .

It costs a fortune alone just for the paper needed to list the extra models. For 1958 there are *six* engines available: the six-cylinder, 223-cubic-inch job with single exhaust; the 292-cubic-inch V8 job with single exhaust; the 332-cubic-inch V8 with single exhaust; the same with four-barrel carburetor; the 332-cubic-inch V8 with four-barrel carburetor and dual exhausts; and the 352-cubic-inch V8 giant with four-barrel carburetor and dual exhaust. This latter engine (the biggest in the Big Three camps by half an aspirin tablet) is available on all models except the Custom and the Custom 300. It is interesting to note that there is no mention this year of the supercharged engines Ford was pushing in '57 which showed up very well in stock car competition.

The biggest gizmo with Ford is their new air suspension and levelizer feature. But as this, in various forms, is the same as the air ride featured by Chevy and other GM cars and all the rest of the Ford line, all I can say is that air suspension as we have it today is a real plumber's dream. The major difference between brands is that different plumbers are making them. Why is it that when a completely new feature (if you want to call it that) such as air suspension or even tubeless tires comes out, so many makers release it the same year? As you MI readers are hepper than the average man, you know as well as I

[*Continued on page* 172]

Why Air Filters Must Be Changed

Revolutionary new FRAM Air Filter reduces engine wear as much as 90% . . . but, must be properly serviced!

Air can be your engine's worst enemy! Here's why. For every gallon of gasoline your engine burns, it gulps 9,000 gallons of air—air that comes from outside the car—laden with dust, dirt and other abrasives. If these abrasives were allowed to enter your engine you'd quickly have an expensive repair bill!

Now, an air filter has been developed that gives car owners almost perfect engine protection against these abrasives. This is the new *Filtronic* type carburetor air filter. More than half of all '57 and '58 cars are equipped at the factory with this type.

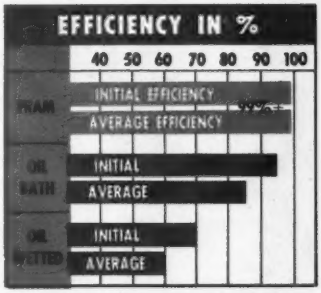
And most of these cars are equipped with FRAM *Filtronic*® Carburetor Air Filters which have an amazingly high efficiency of 99%+ throughout their long life. Unlike other filters of this type the FRAM *Filtronic* Air Filter absolutely prevents the by-passing of dirty air due to the exclusive FRAM patented, built-in gasket.

As a result of this very high efficiency, *Filtronic* type air filter cartridges trap and hold more dirt and dust than old style filters. This means they must be serviced and replaced regularly.

So, for a smooth-running engine that keeps the power you paid for, follow your car manufacturer's recommendation: have your air filter serviced regularly; replace it at least once a year.

AND, REMEMBER TOO, A CLEAN OIL FILTER keeps dirt and sludge out of your engine. For best performance, be sure to change *both* your oil and air filters regularly. Be sure to insist on FRAM—the filter chosen as original equipment by more car manufacturers than any other brand!

FRAM Corporation, Providence 16, R.I.
FRAM Canada Ltd., Stratford, Ontario



The highest filtering efficiency—initially and throughout long life: FRAM *Filtronic* Carburetor Air Filter.

You expose your engine to this kind of damage when you neglect your carburetor air filter.

Here's the air filter that reduces engine wear up to 90%! Always insist on genuine FRAM *Filtronic* Carburetor Air Filters.

Remember—

FRAM Filters best!

The '58 Ford

[*Continued from page* 170]

do that the spy system in the automotive camps would make Khrushchev drool with envy. As I wrote here years ago, when I really want to find out what Ford is planning I go to a man in the GM or Chrysler camps and vice versa. It never fails. In fact, some of these boys know exactly what is planned for 1960 by the competition right now.

The car I tested principally—although I tested several models—was the big Fairlane 500 with the 352-cubic-inch engine on a 118-inch wheelbase. I first tried out one of these with Ford Aire Suspension which was extremely pleasant over Belgian block roads and simulated railroad tracks. I also tried it on turtle-back crowned roads for checking the levelizing properties. The big thing about the levelizing control is that you can load a station wagon, or even a sedan, with bricks and in a few seconds the car will be going down the highway on an even keel instead of up-nosed like a canoe with me and McMichael both sitting in the stern.

All Aire Ride suspensions (which carry a considerable price tag) consist of a compressor, an air pressure reserve tank and four steel-and-rubber bladders that are pumped up to roughly 120 pounds per square inch at all times. A feature article by some nut more dedicated than I am is needed to bring all the gory details to light. I'd do it but frankly I don't think it's worth it.

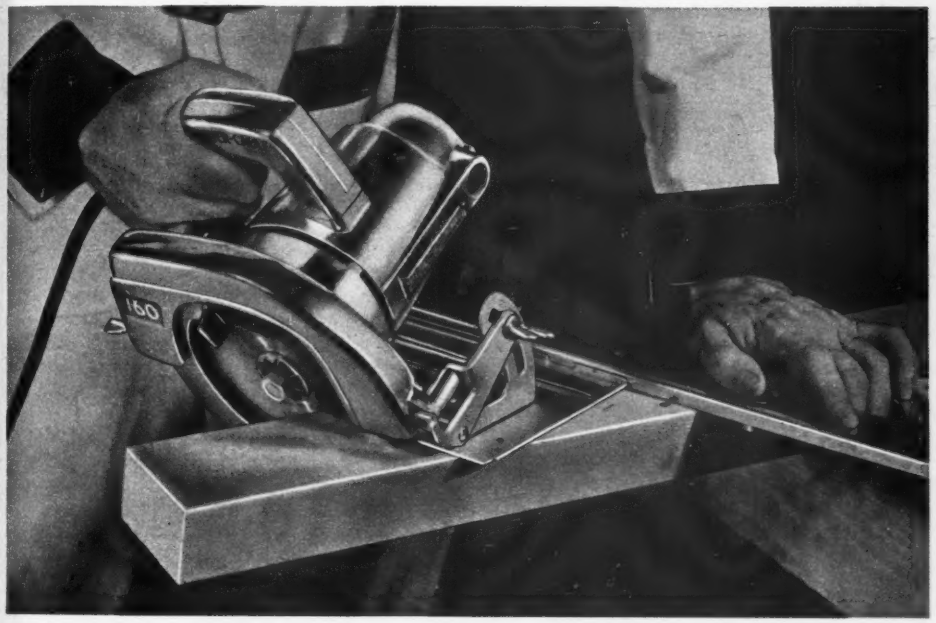
All the new V8 Fords this year, including my test car, have a new keystone-shaped intake manifold which has been smoothed out in the best hot-rod tradition. Ford has a new dual range automatic transmission which is as smooth as scratching your ear with a black cat's tail. It downshifts with absolutely no jolt whatsoever. In my test car (which was spinning a 2.69 rear axle with a four-speed automatic transmission) I could bang out 0-60 mph in 9.5 seconds, get up to 80 mph in 18 seconds flat and jump from 40-60 mph in 5.6.

This is made possible through good transmission gearing, as a 2.69 axle (or rear end, to be more colorful) from a torque-needed standpoint is slightly higher

[*Continued on page* 174]

Porter-Cable gives you this popular

professional quality saw for only $59.50



Big saw performance! Porter-Cable's Model 160 Saw gives you exclusive features found *only* in Porter-Cable quality Saws — at a sensational, new low price!

It makes every professional cut, including compound miters, in full 2" dressed lumber. It provides all the power, speed and cutting capacity you'll need in a saw.

Model 160 Saw is precision-built throughout for years of trouble-free service. You get the famous Porter-Cable Kick-Proof Clutch, telescoping guard, precision ball bearings and instant depth and bevel adjustments, for accuracy and ease of use.

For real saw value, you can't beat this low price anywhere. It's at your dealer's now — be sure to see and try it. Write for free literature.

Model 160 Saw, Only **$59.50**
In handy kit form, **$69.50**

Kit Includes:
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Rip Guide for fast, accurate ripping all dressed 2" lumber up to 45°

Carrying Case . . . constructed of strong, welded steel for full protection and durability

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In Canada: write Porter-Cable, Ltd., Box 5019, London, Ont. Canadian prices slightly higher.

The '58 Ford

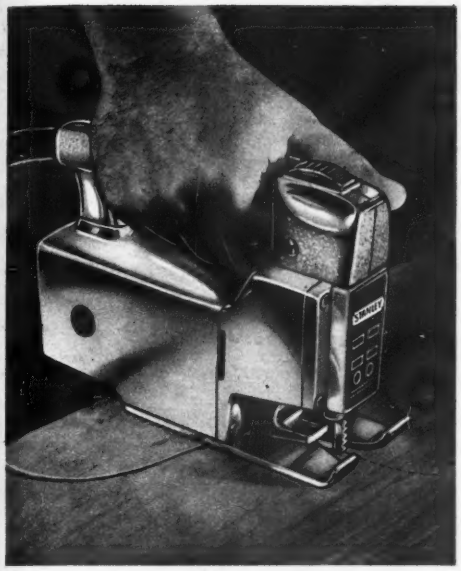
[*Continued from page* 172]

than the Empire State Building. This type of gearing will do two things. First, even with a larger engine it should assure pretty good fuel economy because the engine will not be turning nearly as many times to cover a mile as it would with a 2.92, 3.11 or 3.36 axle. By the same token it will take all the power that those 352 cubic inches can produce to get up to extreme top speed. It is doubtful that anyone will try to pull such a gear at the time trials at Daytona Beach in February.

As Hans Matthias, Chief Engineer at Ford, told me when I pointed out this possibility, "Ford has more optional rear-axle ratios than you could shake a stick at." I'm quite a stick-shaker. Matthias naturally had to point out that Ford was no longer building cars for competition but would continue to sell the buying public exactly what it wanted. Before getting away from this rear-axle pitch let me bring up the fact that this 500, able to turn a 9.5 second 0-60 mph with the 2.69 gearing, could undoubtedly break under eight seconds with, let's say, a 3.36—providing the cam profile was bent for instant high rpm.

I drove this car many miles over all types of road and at speeds over 100 mph. The '58 steers smoother than ever. This is partly due to the new recirculating ball-and-nut type steering gear which lower friction drag and makes it almost as good as full-time power steering. My main test car had conventional suspension and I, for one, thought it was excellent. The roadability was just about tops. This 500 is a medium-priced car any way you slice it, has excellent brakes and the automatic transmission is extremely smooth. All in all, I got that Old Ford Feeling that if I owned this car I'd be very well outfitted and it would stay with me for a quarter of a million miles if I wanted it to. And without too much expense.

In summing up, Ford cars for '58 are quality *en masse.* •

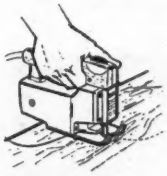


This New Stanley Sabre Saw makes all kinds of cuts in all kinds of places

A heavy-duty precision tool

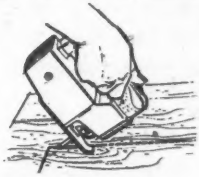
Introductory price . . . only $54.50

This portable jig saw cuts 2″ lumber, plywood, plastics, sheet metal, etc. And the blades you use have 25% longer life because they have a 25% longer stroke. It's a fast cutting, smooth-working power saw that makes all kinds of cuts in all kinds of places. Try it and see for yourself.

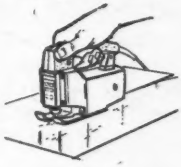


Cutting curves

Cutting up to a wall



Making plunge cuts



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- ***3300 strokes per minute***
- ***Chip blower keeps cutting line clear***
- ***Quick, easy blade change***
- ***Stanley-built heavy-duty motor***
- ***Anti-vibration mechanism***
- ***Cool, comfortable, easy grip handle***

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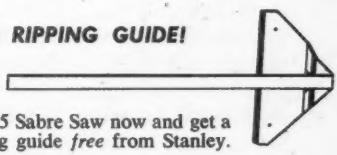

Buy your H75 Sabre Saw now and get a handy ripping guide *free* from Stanley.

Write for free Catalog 400E to Stanley Electric Tools, Division of The Stanley Works, 96D Myrtle St., New Britain, Connecticut.

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Santa Says:

3 x 3 = 7½

That's good arithmetic—and the smart answer to your Christmas gift problems! For just $7.50 you can send *three* 1-year gift subscriptions to MECHANIX ILLUSTRATED (regular price would be $9.00). And each additional 1-year gift subscription is only $2.00 (regularly $3.00). Here is a gift that will bring fun and enjoyment to your friends and relatives all year long—a 12-in-1 Xmas remembrance! Just write names and addresses on the handy, postpaid order card and drop it in the mail. We'll send each of the folks an attractive Christmas gift announcement card for you at no extra charge.

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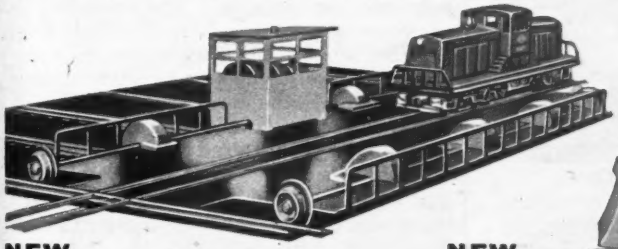
Newest in the LIONEL yards

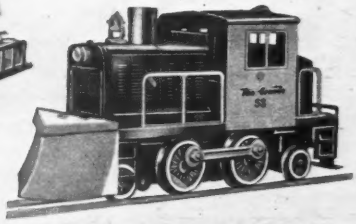
Look at these locomotives, cars and accessories. Then see them and the newest and longest freight and passenger train sets *in action* at your Lionel dealer.

Lionel Super "O" track with its two realistic flat-top "T" shaped running rails and inconspicuous third rail is authentic even to the molded ties, accurately detailed tie plates and rail spikes.



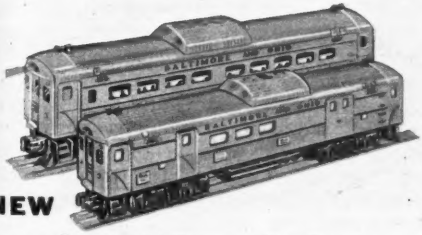
NEW

No. 350 Engine Transfer Table. Fully motorized table moves locomotive to parallel track via remote control. Red light flashes when rails of table and siding are aligned. Loco not included.



NEW

No. 53 Denver & Rio Grande Snow Plow Loco. Jaunty new motor unit based on Vulcan 30-ton gear drive diesel engine. Perfectly-molded snow plow on front. Loco 7½" long.



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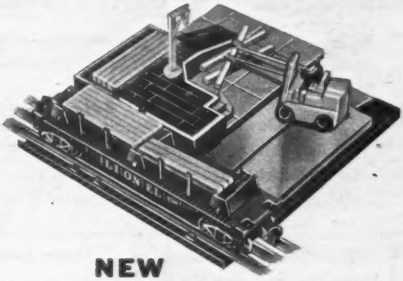

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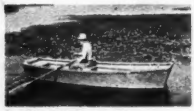
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The '58 Chevy

[*Continued from page* 93]

revving close to three million in second gear just to get around your 55-mph guy. A wide-range box gives you good low gear poop and good top gear stuff, with a prim second gear tying them together. Generally speaking, better economy also goes along with the wide job.

Styling is another big thing at Chevrolet this year. Chevrolet, like Edsel, has now reversed the Rear Fin Trend and gone over to the Rear Droop School. From a straight stern view the tinwork is quite foreign and the appearance is not only new but neat. The front grille is offset by a group of chrome squares. The dished-in side paneling back of the doors suggest that the Edsel and Chevy designers have been reading each others' mail.

The interior and coachwork of the Impala are top quality. The visibility is adequate and not overdone. The floor level on these jobs is step-down in design, a feature which was developed by Hudson some years ago. On the more expensive Impala and the Corvette one of the neatest gimmicks of the year is a red reflector mounted on the *inside* rear of the door. This means that if some parked lunatic on a dark night throws his door open as you approach, your headlights will pick out the reflector, which may give you time to do something about it. On the two front fenders are two fish scalers, as chrome decorations. These are fairly sharp (knife-like) and could nick the casual do-it-yourself body polisher right across the wrists where the healthy arteries are. If I had these on a car of mine I'd remodel them with a sledge.

The Corvette is no roomier inside than it was last year but in the looks department the new car with its louvered hood is the finest American-type sports car I have seen. It is somehow reminiscent of the 300SL Mercedes without the Jack-In-A-Box roof-and-door feature which, incidentally, the Corvette could use for easier ingress and exit.

Our principle test car (as there were no hopped-up Traveling Man's Specials in the park) was the deluxe Impala with air suspension. Unlike the screaming competition wildcats that Chevrolet made in its gay college days, this is a nice-performing

[*Continued on page* 180]

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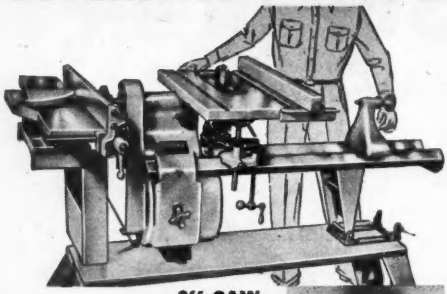

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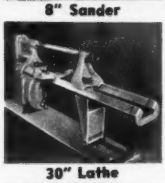

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The '58 Chevy

[*Continued from page* 178]

car, averaging 10.4 seconds for 0-60 mph after a rather slow start of four seconds flat to get to 30 mph. As already stated, this rig weighed an eyelash under 3,600 pounds and is a medium-priced barouche in any league. The 10.4 seconds to 60 mph, though pleasant, is hardly a match for Ed Cole's performance screamers which could easily break nine seconds before the AMA lowered the tide and *they* did it with an engine that was 65 cubic inches smaller.

This 1958 car rides like the Coronation carriage of a dowager duchess and from any direction is a real fine automobile. The brakes are good, it steers well and though top speed was policed right out of this test on the GM Proving Grounds, it can undoubtedly top 100 mph by many miles per hour—*how* many only Daytona will tell. As an uneducated guess, however, it's my bet the old 283-cubic-inch engine with all the available tabasco equipment will prove a good deal faster at Speed Weeks unless some additions are made in available equipment before January first.

In summing up, the 1958 Chevrolets cover a bigger field than ever before and they do it in a bigger way. All models feature the 117½-inch wheelbase, from the Traveling Man's Special up through the deluxe Impala. They range in quality from gamin to glamor and offer a price spread that would uncurl the mustache of Gaston Chevrolet, the race driver for whom the car was named. The new Chevys come close to being tops in looks. They are long on comfort and offer performance that is as variable as the wind, depending on the model. And finally, getting back to those decorations, in the interest of automotive development I sincerely trust that the '58 Chevrolets will see more checkered flags than the ones ornamenting other Chevys. •

From Your Good Luck

[*Continued from page* 105]

swamped the shop. Dortone Jewelers was in business. Dortone was for Doris and Tony, Arnell's wife and brother-in-law. They ran the shop while Arnell kept his job at the factory. He still didn't entirely trust to luck. But when orders for lucky

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Alex Lewyt, the vacuum cleaner king, had Arnell mount a penny on a tie bar for him. A customer had sent it to him, say-

[*Continued on page* 185]

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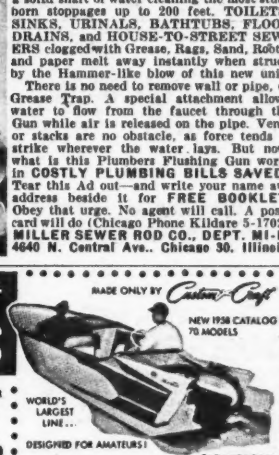

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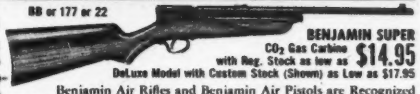

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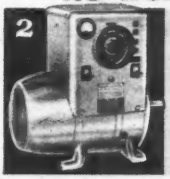

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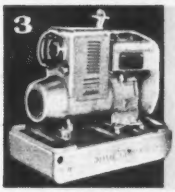

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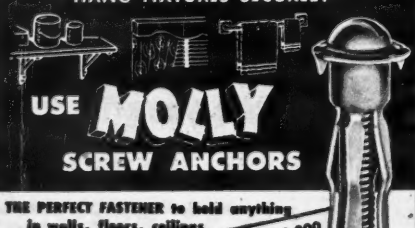

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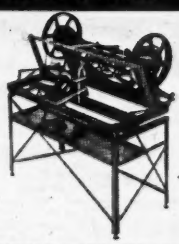

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From Your Good Luck

[*Continued from page* 181]

ing her machine, one of the first big wheel cleaners, had sucked it up. H.S. Forsberg had Arnell make him a tie bar of two razor-sharp saw blades. Forsberg is president of the Whiz Saw Company, and the blades were Numbers 1,000,000 and 1,000,001 to come off the line. And J. J. Weedon, head of the Sunset Colorama Dye Corp., wanted Arnell to clip sample phials of dye and colorfast solution to his wrist watch.

Can the average man hope to do as well in the jewelry business as Arnell has done? Arnell says yes, if you know either jewelry or watchmaking yourself. The watch repairing at Dortone is done by Sam Melillo, an old time trumpet-playing buddy of Arnell's. You can learn the trade either by working at it as Arnell did or making a hobby of it first as Melillo did.

To make jewelry that pays—like turning $50 worth of gold into $250 worth of jewelry, or $50 worth of sliver into $1000 worth of merchandise—you need a skill and a sense of beauty. To do the work fast enough to make $200 a week you must be able to work fast. All that doesn't come in a week of studying jewelry making.

Naturally Arnell doesn't give out important figures, but he has said that with $2000 to $5000 and a good credit rating a man could start a store. If he hasn't got this he'd better stick to making jewelry or repairing watches and clocks at home for the time being. But more important than anything is knowing your market and what price to pay for what kind of goods.

When he had just opened his shop Arnell used to stroll by the window at night. When a window shopper appeared he would say "Quite a display, eh?" like some friendly, innocent soul who had never seen the place before. Too high priced, one passerby answered; another wondered if the store handled silverware. Next day Arnell had less expensive items on display and an array of cutlery. That's the kind of interest a business thrives on. That and luck, of course.

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make up to $3 or $5 an hour with the FOLEY SAW FILER

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"I made $765 last year filing saws, and it sure comes in handy. I do this work in my spare time." —James B. Williams

"Last year's profit amounted to $3,000. Not so bad for a one-man outfit."—Charles C. Hough.

"I have done 4 or 5 thousand saws in my spare time in the 4½ years since I got the outfit, and they are all coming back with repeat orders." —Len Crego.

FOLEY MFG. CO., 1215-7 Foley Bldg., Minneapolis 18, Minn.

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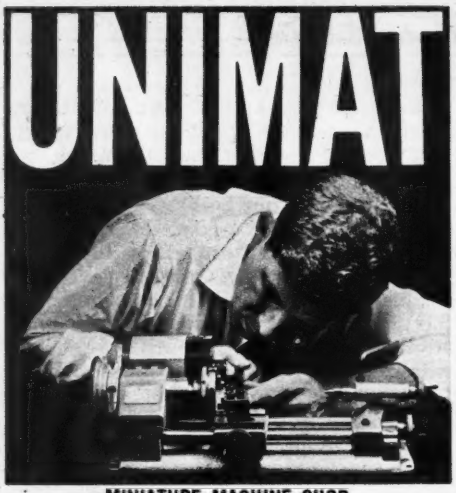

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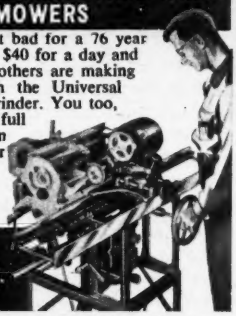

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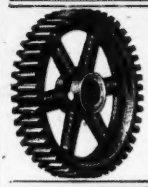

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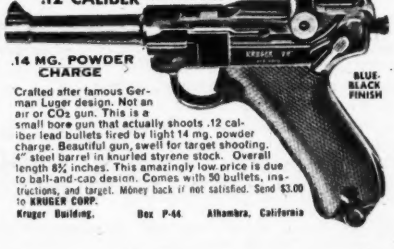

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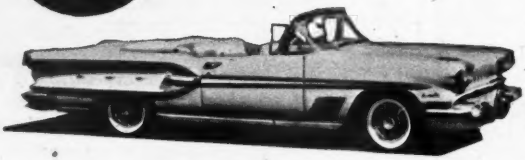

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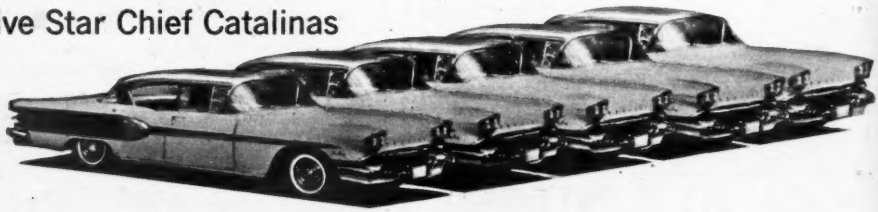

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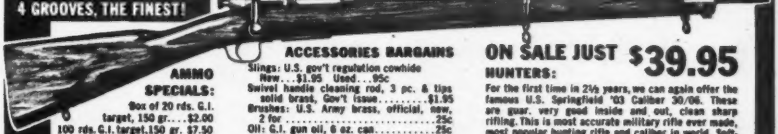

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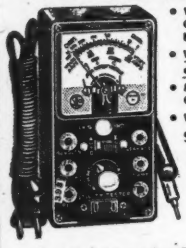

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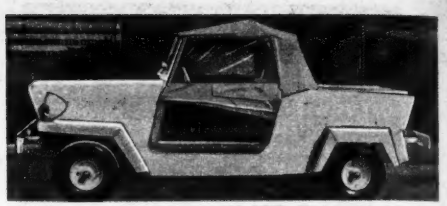

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Telescope Maker's Page

[*Continued from page* 154]

of metal lath were cut and wired to the iron strips over the black paper. These were fitted snugly on the form. Short lengths of wire were twisted around the metal lath and steel strips.

The cement was a mix of three parts fine sand and one part cement, with enough water to make it thick and soupy. A short piece of broom handle on the back of a piece of square wood made a "hawk." A small trowel spread the cement to a depth of about one-half inch.

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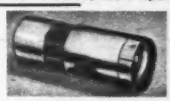

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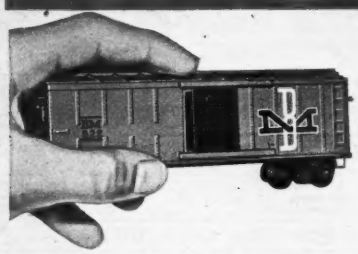

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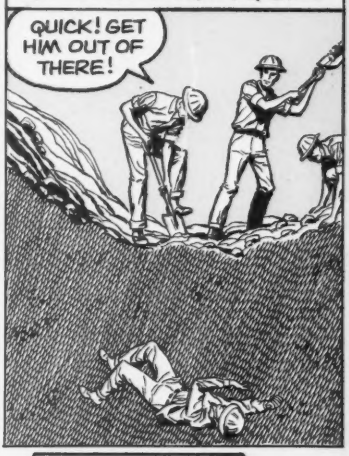

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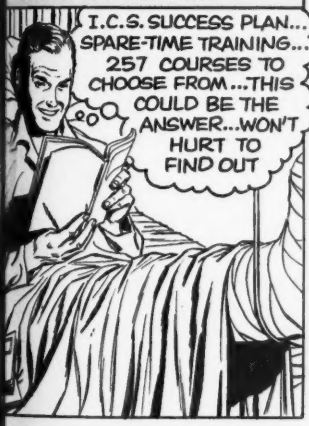

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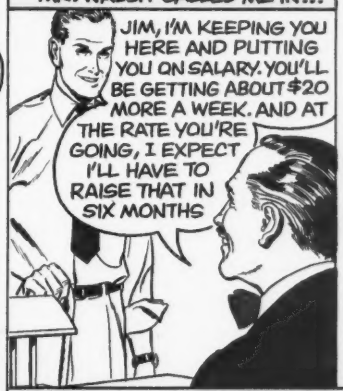

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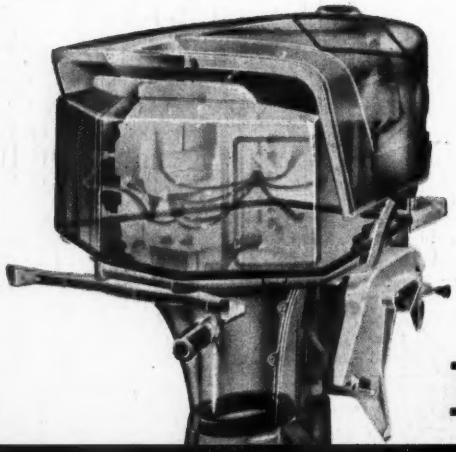

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